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UPON

ALIMENTARY TOXÆMIA IN NERVOUS DISORDERS.

Delivered before the Hunterian Society on Feb. 22nd, 1922.

BY THEODORE THOMPSON, M.A., M.D. CAMB., F.R.C.S. ENG., F.R.C.P. LOND.,

PHYSICIAN TO THE LONDON HOSPITAL AND TO THE HOSPITAL FOR SICK CHILDREN.

IN considering the effect of infections derived from the alimentary tract upon the nervous system, it is of great importance to differentiate between the nature of the poisons and the method of their transference from their seat of origin to the nervous tissues. The poisonous agents may be either the living microbes or their soluble toxins. In the former case the symptoms produced may be general or focal and there will often be a certain degree of asymmetry in the results produced depending upon localisation or the living microbes in the various parts of the nervous system. In the case of soluble poisons, however, the results will generally be symmetrical. There are two main channels by which poisons reach the nervous tissues —first by the blood-stream, when the poisons are absorbed by the blood-vessels of the alimentary tract and carried through the circulation to the brain and spinal cord; secondly, by the lymphatics surrounding the efferent nerves. These lymphogenous infections of the central nervous system have been studied by Orr and Rows, who carried out a prolonged series of investigations which suggested the existence of an ascending lymph-stream in the perineural sheath of the efferent nerves. Micro-organisms and their toxins may pass up into the central nervous system along this route and may then spread in the lymph spaces of the pia mater and in the substance of the spinal cord, passing in as a rule by the lymph spaces of the posterior roots. In the spinal cord inflammatory changes occur in the neuroglia, the nerve cells degenerate, and the myelin sheaths of the nerve fibres undergo fatty degeneration. Orr and Rows showed that these changes in the nervous system bore a constant relationship to the nerve-supply of the point of infection. In certain cases the nerves themselves showed evidence of perineuritis, but by no means in all, and the condition is not necessarily a true ascending neuritis, but the poisons may ascend the lymph-stream in the perineural sheath without giving rise to much damage to the peripheral nerve itself, and it is only when the central nervous system itself is reached that marked changes take place. It is clear that the anatomical distribution of these changes will correspond with the site of infection. On the other hand, when the poisons are absorbed by the blood-stream, and reach the brain and spinal cord by this route, the changes produced will tend to be symmetrical.

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POST-DIPHTHERITIC PARALYSIS.

In human diphtheria the site of infection is usually situated on the tonsils and fauces and neighbouring parts of the larynx and nasal cavities. This area is innervated by the fifth, ninth, tenth, and eleventh cranial nerves. As a rule, the Klebs-Löffler bacilli are found in the membranous exudate of the oro-nasal cavities and only in very rare cases is there a general invasion of the body. Their effects are produced by a soluble toxin, the diphtheria toxin. The resulting paralysis usually makes its appearance in the second week of the disease and may occur as early as the seventh or eighth day. The palate is first affected, the voice becomes nasal, and fluids regurgitate through the nose. The palate is relaxed and motionless and its sensation is also diminished. The constrictors of the pharynx become affected, leading to difficulty in swallowing. At this stage weakness of the sterno-mastoids is frequently present, and these muscles become tender to pressure. It is clear, then, that the first signs of paralysis which follow diphtheria are in the region of the ninth, tenth, and eleventh nerves, which supply the area in which the infective focus lies. In fatal cases of diphtheria marked chromatolysis in the nuclei of the vagus nerve has been found by Bolton [1] to be the most constant change in the nervous system. At the end of the third week the oculo-motor nerve becomes involved, and the most characteristic lesion of this nerve is the loss of power of accommodation, producing a sudden inability to read. More rarely strabismus is found. Later still there is a loss of knee-jerk, with weakness of the lower limbs, sometimes of the upper limbs, and more rarely of the face—in fact, the signs of a generalised toxic neuritis. The intercostal muscles, diaphragm, and abdominal muscles become affected.

Experimental Diphtheritic Paralysis.

In experimental diphtheria, where the toxin is injected subcutaneously or intravenously, the paralysis is of a different type. Thus Crocq [2] states that diphtheritic paralysis is distinctly different in man and in the rabbit. In man it begins with involvements of the palate and throat, and in the rabbit by the weakness of the hind legs. In man diphtheria seems to produce two different kinds of paralysis—one remaining localised in the mouth, eyes, nose, larynx, and pharynx, the other being generalised and liable to affect the whole body, beginning with the lower limbs. Ransom, [3] Dean, [4] and Bolton [5] all agree that in experimental work in animals there is a generalised paralysis beginning in the lower limbs, as a rule without involvement of the cranial nerves.

Human Diphtheria in Extra-Faucial Sites.

In a series of able papers Walshe [6] has given the results of his observations upon diphtheritic paralysis occurring in war wounds and in the septic sores commonly seen among the troops in Egypt and Palestine. These were in many cases proved to be cutaneous infections by the Klebs-Löffler bacillus. In a case of post-diphtheritic paralysis following an infection of the right thumb, Walshe watched the development of a local paralysis exactly similar to the local faucial paralysis which follows a tonsillar infection. He observed anæsthesia of the scar in the thumb, which spread on to the radial site of the hand and was accompanied by clumsiness and difficulty in performing fine movements of the right hand. Three or four weeks later weakness of the legs, paræsthesia, and all the symptoms of a generalised toxic neuritis developed but without any involvement of the palate. It is thus clear that a local lesion is followed by a local paralysis in the site of the original lesion, and it is probable that the poison has ascended to the nervous system along the perineural lymph sheaths from the site of infection. Walshe [7] also records a case of septic sores in the thighs and buttock with onset of sphincter and local sensory disturbances in the seventh week. Subse-

quently severe polyneuritis with paresis of accommodation developed, but no palatal paralysis was observed.

I observed at Great Ormond-street Hospital a case with a large sloughing ulcer round the anus and vulva in a little girl, from which a pure culture of Klebs-Löffler bacilli was obtained. After three weeks weakness of the legs with loss of knee-jerks developed, but no paralysis of the palate or regurgitation of fluid occurred. Walshe compares the symptoms of post-diphtheritic paralysis to those of tetanus as described by Meyer and Ransom,[8] who divide tetanus symptoms into three groups: (1) Local tetanus where the first symptoms appear in the immediate neighbourhood in the site of the infective focus; (2) specific tetanus where irrespective of the site of infection there is early infection of the jaw muscles—trismus; and (3) generalised tetanus in severe cases.

Suggested Elements in Symptom-Complex of Diphtheritic Paralysis.

He suggests that there are three definite elements in the symptom-complex of diphtheritic paralysis:—

(1) A local lesion in the segments of the central nervous system from which the infective focus receives its innervation. The pathological process underlying this local paralysis is an ascending lymphogenous toxi-infection by the perineural lymphatics from the site of infection.

(2) A specific lesion in certain elements of the third nerve nuclei resulting in the loss of the power of accommodation. This specific lesion occurs not only in faucial but also in extra-faucial diphtheria, and appears to be independent of the site of the infection. It is probably due to the circulation in the blood-stream of the toxin, which has a specific effect on this part of the oculo-motor nucleus.

(3) A general polyneuritis, due to the circulation of the diphtheria toxin in the blood-stream and comparable to the polyneuritis caused by organic and inorganic poisons as well as other microbic toxins.

ALIMENTARY TOXÆMIA FROM MEAT POISONINGS.

Van Ermengen [9] in 1892 isolated a bacillus, which he called the *Bacillus botulinus*, in certain meats, especially ham; ingestion of this infected food produced severe gastro-intestinal symptoms and was in some cases followed by cranial and general nerve paralyses. I observed one such case in 1913; a man, his wife, and daughter all became violently ill with vomiting and diarrhœa after eating some sausage which had been sent from Germany. They all three recovered, but about a fortnight later the man developed bilateral facial paralysis and strabismus, followed by loss of knee-jerks and general weakness of the limbs; ultimately, however, he recovered.

Beri-Beri.

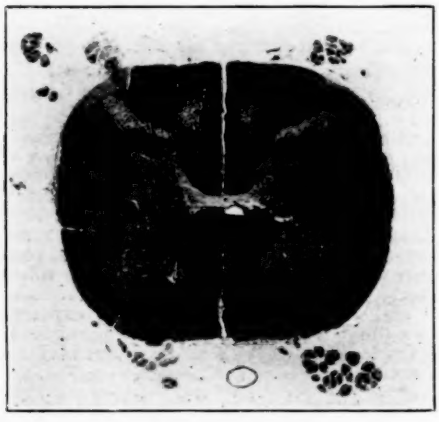
There has been much dispute concerning the cause of the polyneuritis of beri-beri; the disease certainly has a direct relation to the diet, and Japanese observers consider it is due to a deficiency in an essential enzyme in the diet—the anti-neuritic or B-vitamin. Wright [10] and others, however, regard the disease as due to an unknown infection producing gastro-intestinal symptoms followed by motor and sensory paralysis and cardiac failure. From the results of pure starvation experiments it seems clear that both in man or in animals polyneuritis is not caused by complete deprivation of food, and therefore of vitamins, and that in order to obtain the polyneuritis it is necessary to feed on unsuitable food, such as polished rice. It seems much more likely that the polyneuritis of beri-beri is analogous to that produced by diphtheria.

ALIMENTARY TOXÆMIA IN DISEASES OF THE SPINAL CORD.

There is a certain group of spinal cord diseases characterised by a more or less rapidly developing spasticity and ataxia of all four limbs. The pathological conditions underlying these changes consist in a diffuse and patchy degeneration of the posterior and lateral columns of the spinal cord, especially in its cervical and thoracic region. These cases are often associated with a more or less grave anæmia, and with definite gastro-intestinal symptoms resulting in a progressive malaise which is generally fatal. In this group of spinal cord diseases may be included: (1) subacute combined degeneration of the spinal cord; (2) the postero-lateral degeneration found in cases of pernicious anæmia; (3) the spinal cord changes which are found to occur in certain cases of grain poisoning, especially ergotism and lathyrism; and (4) pellagra.

The relation between subacute combined degeneration of the spinal cord and gastro-intestinal lesions has not received much attention. During life, in addition to the nervous symptoms, gastritis, diarrhœa, and septic conditions of the mouth have been noted, while at post-mortem examinations small ulcers in the colon and signs of gastro-enteritis have been observed. In the following case, described by me in *Brain*,[11] of subacute combined degeneration of the spinal cord with grave anæmia, a large granulomatous ulcer was found, the base of which was gangrenous, and upon

FIG. 1.



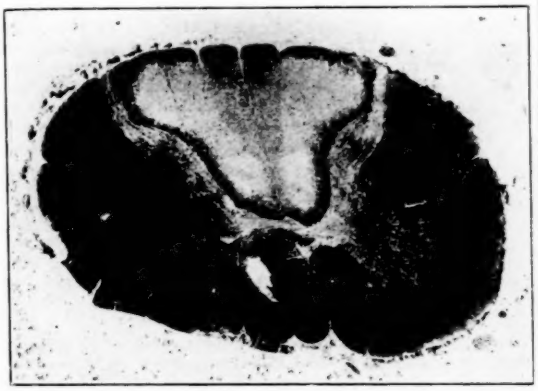
Case of spinal cord degeneration associated with a granulomatous ulcer of the stomach. Section through the third lumbar segment stained by the Weigert-Pal method. Two small rounded areas of vacuolar degeneration are present in the centre of the posterior columns.

FIG. 2.

Section through the ninth thoracic segment stained by the Weigert-Pal method. Marked degeneration in the greater part of the posterior columns. A few scattered vacuolar spaces in the lateral columns.

microscopical examination was found to consist of necrosed tissue containing large numbers of Gram-positive myelial threads, in addition to numerous cocci and bacilli. The ulcer was large and almost encircled the stomach, reaching to within 1½ inches of the pyloric sphincter. Microscopical examination of the edge and base of the ulcer proved that it was not an ulcerated medullary carcinoma of the stomach,

FIG. 3.



Section through the fifth cervical segment stained by the Weigert-Pal method. Much degeneration in the central parts of the posterior columns.

but a true granulomatous condition. In this case the man was a boiler-maker, aged 53, admitted to the London Hospital in 1903 complaining of the loss of the use of his legs. Except for an attack of small-pox when 19 he had always been in good health; he denied venereal disease, and had had ten children, of whom nine were alive and well. There was no history of nervous disease in his family. His illness was rapid, lasting three months altogether; the symptoms consisted in paræsthesia of the hands and feet, with loss of passive position and localisation in the hands and legs. There was marked anæmia—between 1 and 1½ million red cells, with rather a high colour-index. Abdominal symptoms were slight, but there was a good deal of pyorrhœa, and towards the end complaint of abdominal pain. Death resulted from bronchitis and heart failure. Sections of the spinal cord and medulla showed patchy degeneration, practically confined to the thoracic and cervical regions and to the posterior columns (Figs. 1, 2, and 3). In this case the association of a definite lesion in the stomach with a degeneration of the posterior columns of the spinal cord in the thoracic and cervical regions suggests that the poison from the stomach reached the nervous system along the perineural lymph sheaths of the splanchnic nerves, passing into the spinal cord along the posterior roots, and causing patchy degeneration in the posterior columns. In other cases of subacute combined degeneration progress is more gradual; at first symptoms of degeneration of the posterior columns occur; later spasticity of the legs develops, and finally complete sensory and motor paraplegia.

Pernicious Anæmia.

In pernicious anæmia the evidence of a gastro-intestinal toxæmia is very marked. The curious tender spots about the mouth and tongue which occur so constantly in the early stages of the disease are frequently followed in the later stages by persistent vomiting, and not uncommonly by diarrhœa. In several cases I have found the intestinal flora distinctly abnormal, and in three cases I have noticed a preponderance of diphtheroid organisms. The evidence of blood destruction in the portal area also suggests intestinal toxæmia as the cause of the disease. The nervous symptoms in pernicious anæmia are exactly analogous to those described in subacute combined degeneration of the spinal cord, and like them probably due to an ascending lymphogenous infection from the nerves from the stomach and intestines.

Ergotism.

In ergotism we have a disease due to the ingestion of rye grain which has become infected by a fungus—the *Claviceps purpurea*. The disease has been present in France, Switzerland, Germany, and in Russia. Nervous or spasmodic ergotism begins with gastro-intestinal irritation manifested by vomiting, purging, and abdominal pain with slight fever. Then after 10 or 15 days spasmodic twitchings occur in the arms and legs with painful convulsive cramps. Later paralysis and loss of control of the lower limbs come on, and may be followed by delirium and dementia; death may occur from cardiac paralysis, and is often preceded by convulsions. Tuczek [12] found degenerations of the posterior and lateral columns four times in nine autopsies. In this case the gastro-intestinal poisoning seems directly associated with the diseased grain, where spinal and nervous symptoms result from the poison absorbed from the intestine. Lathyrism, which occurs in India and in Italy, is a condition derived from the use of meal made from the chick pea. The symptoms are first of all a condition of gastro-intestinal irritation and then a condition of spastic paralysis, often passing on to a complete paraplegia.

Pellagra.

In pellagra we have a disease of unknown cause, characterised by symmetrical skin lesions largely confined to the exposed parts of the body, by gastro-intestinal disturbances, and by changes in the nervous system. According to Wood,[13] the nervous manifestations of pellagra are found in the spinal cord, both in the lateral and posterior tracts. In one case death resulted from bulbar paralysis. Mental symptoms occur in pellagra, just as in ergotism, and not uncommonly in pernicious anæmia; they are usually of the nature of melancholia with suicidal tendencies. In this group of postero-lateral degenerations of the spinal cord with its various causes we have in all probability a number of gastro-intestinal infections whose toxins reach the spinal cord by the lymphatics of the posterior columns and then the lateral columns of the cord. In the later stages there is also probably a generalised blood-borne infection resulting in changes in the medulla and brain.

ALIMENTARY TOXÆMIA IN BRAIN DISEASES.

The possibility that the alimentary tract is the site of infection for certain of the acute diseases of the brain has received striking confirmation by recent work upon the source of infection in cerebro-spinal fever. In recent epidemics the meningococcus has been found in the naso-pharynx in a large number of cases. Apparently the organism may be present in the naso-pharynx in a virulent condition and yet not give rise to the disease. It may, however, be communicated by a carrier to other people who may be in consequence affected by meningococcal meningitis. So important has the bacteriological examination of the naso-pharynx become in cases of cerebro-spinal fever that routine examination of the nose and throat should always be insisted upon in all those exposed to infection. As the cerebro-spinal membrane is invaded as a whole by the meningococcus the resulting lesions are generally symmetrical, but occasionally destruction is more marked in one part of the brain than another; as a sequel paresis showing some degree of asymmetry may be found.

RHEUMATIC CHOREA.

The connexion between acute rheumatism and Sydenham's chorea has now been definitely established. Although chorea may be the first symptom of the rheumatic infection, sooner or later some other manifestation, such as endocarditis, subcutaneous nodules or joint pains, make their appearance. The view that rheumatism is due to invasion of the body of an intestinal streptococcus has become more and more widely held. The negative results of bacteriological examination, blood cultures, and rheumatic

exudates is not conclusive evidence against this view of streptococcal origin. In three cases I have been able to obtain a pure culture of diplococci from pericardial rheumatic fusions. The frequent association of active tonsillitis with acute rheumatism points to the fact that in many cases the tonsils may be the seat of infection. Gordon Holmes,[14] examining the brains of children who had died of chorea, found small diplococci in the pericellular lymph spaces in the brain—a condition which he states he never found in cases other than chorea. The distribution of choreic movements, while often generalised, is sometimes markedly unilateral, and the so-called hemichorea is not infrequently observed. This would point to the fact that the brain lesions in chorea are produced by a living organism which in certain cases produces more marked changes on one side of the brain than the other. This asymmetrical distribution, so often found, militates against the view that the disease may be due to a soluble poison circulating in the blood.

CHRONIC DEGENERATIVE DISEASES OF THE BRAIN AND SPINAL CORD.

Of late years it has been suggested that many of the chronic degenerative changes of the brain and spinal cord result from intestinal infections. Parkinson's disease, where we get a chronic degenerative condition probably affecting the basal ganglia, has been ascribed to intestinal poisoning, but no definite proof of this has yet been forthcoming. Wilson,[15] in his monograph on progressive lenticular degeneration, where there is a marked destructive lesion of the lenticular nucleus, describes blood-vessels in the degenerating lenticular area filled with thrombus, in the meshes of which many bacilli were present. He suggests, however, that the bacterial infection was terminal and therefore of no pathogenic significance, and dismisses the idea that the disease is of microbic origin.

NERVOUS EXHAUSTION.

The possibility of a toxic factor in general nervous exhaustion has been much debated of recent years. The tendency to look to the purely psychical factors as the sole cause of this condition, to the exclusion of any bodily poisons, has resulted, in my opinion, in much unnecessary suffering to many patients. Pyorrhœa and chronic septic absorption of the roots of dead teeth, which have been crowned, are doubtless responsible for many of the symptoms of nervous exhaustion, and are most important factors in these cases. Chronic septic conditions of the tonsil, also, should never be overlooked. I was very much struck with the importance of tonsillar infection in a recent case of nervous exhaustion. The patient, a middle-aged woman, was sent over to England with the symptoms of nervous debility; for several years she had suffered from periodical attacks of slight sore-throat accompanied by stiffness on the same side of the neck, but these attacks were quite overshadowed by her general weakness and loss of flesh and her nervous symptoms. The tonsil was enucleated and a chronic post-tonsillar abscess found. Ever since the removal of the tonsil she has gradually put on weight and gained strength, and is now fully able to manage her own house, although up to the time of the removal of the septic tonsil she was a chronic invalid unable to carry out any of her ordinary duties.

It is not my intention to enter into a long discussion upon the relation of intestinal stasis to nervous exhaustion. No doubt in many of these cases of visceroptosis there is profound bodily and mental exhaustion. The view that mechanical factors are the cause of this condition must fall to the ground, because both at operation and at autopsy the intestines are found to be extremely thin and atrophied—not hypertrophied, as is always the case when there is organic obstruction to the bowel and consequently of the intestinal contents.

TREATMENT OF ALIMENTARY TOXÆMIA.

To prevent the nervous complications of this condition and to avoid infection from the alimentary tract, it is essential first of all to attend to the hygiene of the mouth and associated cavities. Any traces of pyorrhœa must be vigorously treated; if any suggestion of septic absorption of the root of the teeth is found, an X ray photograph should be taken and the tooth either treated or preferably extracted. Great care should be taken to see that all crowned teeth are free from infection at the roots. The condition of the tonsils should next be investigated; recurrent attacks of tonsillitis and unhealthy and embedded tonsils should lead the physician to consider carefully whether the glands should not be removed by enucleation. The use of an antiseptic mouth-wash night and morning is most advisable, especially in towns and amongst those working in crowded rooms. The condition of the accessory nasal sinuses should also be inquired into. Regular daily evacuation of the bowels is essential in the majority of people, and liquid paraffin has been of great value in obtaining this object.

The relation of food ingested to alimentary toxæmia is very important. The work of Coombes and others has shown that the ingestion of large quantities of meat tends to produce excessive fermentation in the intestine. These observers advise a period of rest from meat foods for some weeks and the giving of farinaceous foods during this period. On the other hand, many observers have shown that the ingestion of carbohydrates, especially sugar, favours certain forms of intestinal putrefaction. It is probable that diminution of the total bulk of the food is of most value in reducing alimentary toxæmia. Most people eat far too much and might with advantage make a very considerable diminution in the total amount of food eaten. The preparation of food is also most important; all salads and uncooked vegetables should be carefully washed and prepared before being eaten. Milk is a potent source of infection of the alimentary tract, and the utmost endeavour should be made to obtain a pure milk-supply.

The methods which have been adopted of modifying bacterial contents of the intestine are important. Much work has been done in the study of the normal and abnormal intestinal microbes, and of late years vaccines prepared from fæces have been greatly used. The giving of vaccines prepared from the *Bacillus coli* and streptococcus normally found in the fæces cannot be too strongly condemned, but if abnormal organisms are found in the fæces and definite signs of intestinal poisoning are present, the giving of a vaccine from such abnormal microbes is occasionally followed by good results.

The introduction of lactic acid bacilli into the intestines with a view to diminishing intestinal fermentation has had a long and persistent trial with results not as successful as was at one time hoped. The lactic acid may be given in the form of sour milk or of dried tablets mixed with sugar. Intestinal disinfectants are certainly of use in many cases. These may be divided into mercurial preparations, salicylate preparations, and carbolic derivatives. Of the mercurial prep rations, calomel is said to be the most effective, and is best given in small doses of one-tenth of a grain. Of the salicylate preparations, the salicylate of sodium, salol, and salacetol have all proved to be of value, while of the more recent phenol preparations, both dimol and kerol have certainly proved efficacious. The taking of copious amounts of fluids also seems to have a good effect in cases of alimentary toxæmia; to persons who have habitually neglected to take sufficient fluid an addition of a bottle of Vichy water once a day has been a great help. Lavage of the large intestine has also been of considerable help to sufferers of alimentary toxæmia.

Although I feel I have dealt with this large and engrossing subject in a very imperfect manner, and although many of the points I have brought forward are still the subject of debate and are far from conclusively proved, yet the importance of alimentary toxæmia in the production of nervous disorders cannot be neglected and merits further careful investigation.

(Continued at foot of next page.)

SYPHILIS IN GENERAL PRACTICE.*

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BY syphilis in general practice I mean the disease as we see it in its various disguises, not as it is seen at a venereal clinic, naked and unashamed. We have all made so many mistakes that we are apt to underrate the frequency with which syphilis causes, modifies, and predisposes to various inflammatory conditions. I thought, therefore, that we might spend our time profitably in considering the question by the light of some illustrative cases. I do not speak of obvious syphilis, which we are all competent to diagnose and treat, but of those cases which are often sent to a general surgeon like myself because they are obscure and need a diagnosis by operation or otherwise.

In many agricultural districts syphilis used to be so rare as to be practically non-existent, and a club doctor might pass nearly his whole professional life without seeing a case. Syphilis did not enter into his mind in making a diagnosis, and he overlooked the few instances in which it formed a factor in the disease he was treating. It will be far otherwise in the next generation which will reap much heredosyphilis as an aftermath of the war. In manufacturing centres, where there is a migratory population and where there is a large foreign element of poor immigrants syphilis is always rife. Doctors practising in these places go to the other extreme and in their eyes every unusual form of inflammation is syphilitic in origin.

Frequency of Unrecognised Syphilis.

Very interesting observations were made in 1914 by Dr. Paul Fildes of the London Hospital in regard to the frequency of syphilitic infection in the East End of London. He took the blood of 1002 persons attending as out-patients at the hospital and applied the Wassermann test. The patients were chosen at random, excluding those who were known to be syphilitic. He found that of 616 males 64, or 10·3 per cent., gave a positive reaction, and that of 386 females 20, or 5 per cent., were positive, although they showed no active syphilitic lesions and were attending the hospital for other complaints. He drew the conclusion that in a typical working-class population in the East End of London at least 8–12 per cent. of the adult males and 3–7 per cent. of the adult females have a spirochætal infection. If this be true of the working-class population it is probably true, but to a lesser extent, of those in the higher social grades. The only difference is that the higher classes lead an easier life in more healthy surroundings. They are willing, therefore, to undergo more prolonged treatment to cure their disease, whilst the lower working classes are content with the treatment of symptoms sufficiently severe to hinder their work.

Syphilis, as you well know, presents two peculiarities: (1) There are long periods when the spirochæte lies dormant and the patient appears to be in perfect health; and (2) it is transmitted to the second generation. It is no wonder, therefore, if one or other of these peculiarities sometimes complicates the diagnosis and prognosis. I will give you instances:—

CASE 1.—A male, aged 80, was brought to see me in 1907 suffering from an inflammation of the right testicle. The swelling had been noticed for six weeks and the patient dated it from an attack of influenza with pneumonia. Examination showed that the body of the testicle was greatly enlarged, the enlargement extending upwards along the spermatic cord. There was no hydrocele; the scrotum showed many large congested veins. The old gentleman had been married for more than 50 years and had brought up a large and healthy family. He had spent a strenuous life and, except for an occasional attack of bronchitis, he could not recall any illnesses. I thought that syphilis could be excluded; I felt sure the testicle was not tuberculous and I arrived at the conclusion that the swelling must be due to a rapidly enlarging malignant growth. The testicle was removed under gas and ether and a microscopical examination showed it to be an excellent example of syphilitic orchitis. He survived to the age of 89 and then died of diabetes.

I have heard of two other cases in which syphilitic orchitis occurred in very old men who had no other evidence of the disease and in both cases the enlargement was thought to be due to malignant disease. It is well, therefore, to have a Wassermann test done and to put the patient on a course of mercury and iodides before pronouncing too positively in favour of sarcoma.

Unusual Source of Infection.

Syphilis is sometimes overlooked, even when it is quite obvious, by reason of some unusual source of infection, as when it occurs in young unmarried girls who could not possibly have contracted the disease in any of the ordinary ways. Such an example occurs in the following case:—

CASE 2.—A healthy and good-looking girl, aged 20, who was engaged to be married, was sent to me some years ago on account of a "boil" or "carbuncle" on her cheek, which obstinately refused to heal under the ordinary methods of treatment. She said that she was fond of swimming, and about six weeks previously she had slipped in getting out of a public swimming bath. She grazed her cheek and thought she must have poisoned it because the sore place ulcerated and the glands in front of her ear had swelled and become very painful. This was before the discovery of the spirochæte, but the appearance of the ulcer led me to examine her mouth which contained numerous mucous patches on the fauces and gums. I had no hesitation in arriving at a correct diagnosis and recommended black wash for the ulcer and the internal administration of mercury. She improved rapidly and was kept upon a course of mercury for two years. She then became importunate about marriage, but it was explained that although she had remained free from symptoms, it would be unsafe for her to marry and have children as syphilis on the maternal side was even more serious than when the father was infected. She was advised to wait some time longer, and went away apparently with the intention of doing so. Other counsels, however, prevailed and in a few months she returned saying that she was married and was already pregnant. She was again put on a course of mercury, and I saw no more of her until she brought her baby girl to show me how fine and healthy it was and how foolish I had been in trying to dissuade her. Six weeks later it had snuffles, and at eight years old a well-marked attack of interstitial keratitis. The child has now weathered the storm, and is growing up into a fairly healthy but anæmic young woman. The husband remained unaffected throughout.

The initial mistake was easy to make in this case, for who could imagine that a girl would catch syphilis by scratching her face in a swimming bath? It was much more natural to suppose that the sore place was a boil and when it ulcerated later that it was tuberculous. The speedy enlargement of the nearest lymphatic glands might have put the doctor on the alert, for it is known to be an early sign of non-venereal syphilitic infection.

* A paper read before the Balham and District Medical Society.

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Slightness of Initial Signs.

Another not uncommon cause of difficulty in diagnosis lies in placing too great a reliance on the entire absence of any history of infection. This may be the result of real ignorance on the part of the sufferer due to the insignificance of the original lesion. We were taught as students that the hard or "Hunterian" chancre was the true primary sore; you can all remember in the out-patient room of your hospital when the surgeon made you take a piece of lint and carefully feel the sore to determine the degree of induration. We have had to learn for ourselves that improved habits have modified the sore and that it is no more necessary for it to be indurated than it is for a clean wound to suppurate. In the time of Hunter the social condition of the poor was much worse than it is at present. Sanitation was unknown; window taxes and chimney taxes put a premium on insufficient ventilation and overcrowding; the seat of inoculation ulcerated and left a permanent scar. Amongst the better classes all inflammations were of the "sthenic" type. Men lived hard, drank hard, and systematically over-ate. Local treatment, moreover, consisted in touching the sore with solid nitrate of silver, or in the application of an escharotic ointment. The sore, therefore, was kept inflamed and the Hunterian chancre was an artifact. Life became more civilised and treatment less drastic under the French Empire, and the hard sore was replaced by the "chancre parcheminée," or the parchment sore. This, in turn, has been replaced by a simple pimple or abrasion showing such slight signs and giving so little inconvenience that it is difficult for the unfortunate patient to realise that he has contracted so serious a disease. Indeed, if he is not very observant, and if the after-symptoms have not been well-marked, he remains in total ignorance of his ever having been infected. Here is such a case:—

CASE 3.—A gentleman, aged 50, had spent much of his time in a tropical country, where he had suffered from repeated attacks of malaria and from enteric, of which he nearly died. Since his return to England he had complained of repeated attacks of hepatic colic; he had become jaundiced and he had lost flesh. Examination showed a large, knobby liver, and I had very little doubt that he had cancer. He refused to accept my verdict, as he was certain that he had gall-stones, and he insisted that I should undertake an exploration, make sure that he had no gall-stones, and determine the real nature of the nodules in his liver. I performed a laparotomy and found the liver greatly enlarged, puckered, and with dilated bile-ducts and veins. The gall-bladder was thickened and enlarged, but it contained no gall-stones. A piece of the liver was removed and microscopical examination showed that there was a chronic inflammation of the fibrous capsule, but no evidence of cancer. On thinking over the appearances and examining the sections, it occurred to me that they might be due to syphilis, and I took an opportunity of questioning him. He was a truthful person, anxious to discover the cause of his illness; it was evident, at first, that he had forgotten much, and it was only after casting about in his memory that he could recall a soft sore and a bubo ten years previously. Neither had been troublesome, and, so far as he knew, he had never had a rash or sore-throat. A Wassermann test proved to be positive. He was put upon a course of mercury and iodides, and when I saw him 14 months afterwards he was in excellent health and his liver had become much smaller, though it was still somewhat enlarged. The jaundice had disappeared, and there had been no further attacks of hepatic colic.

The mistake in this case was that I did not exclude syphilis before operating. But there seemed to be no particular reason for supposing that the patient had ever had syphilis or that he knew of it.

I once had another patient with syphilitic hepatitis where the diagnosis was even more obscure. The disease was probably inherited, but circumstances prevented any inquiry into the family history and the Wassermann test was negative.

CASE 4.—A boy, aged 6, was brought to me with a great enlargement of the right lobe of his liver. The abdomen contained free fluid and several enlarged lymphatic glands. He had seen many physicians and his parents had obtained various diagnoses, which ranged from hydatids to an abscess of the liver. In view of the great diversity of opinion as to the cause of the enlargement of the liver, I was asked to make an abdominal exploration. I did so and found the left lobe of the liver healthy. The right lobe was puckered, nodular, and scarred. The bile-ducts were greatly dilated and were filled with watery bile. The nodules proved to be circular white masses, varying in size from a small pea to a sixpence. I removed one and it was submitted to microscopical examination. The report stated that it consisted of large degenerated areas with fibrous tissue and a boundary of leucocytes. Small acinous-like ducts were seen, but there was no marked change in the walls of the blood-vessels. The inflammatory process was chronic, and there was a possibility that it might be due to syphilis. Whilst the boy was under treatment he developed some small ulcerated patches on his scalp. The patches had sinuous edges, and were probably gummata, for they disappeared after a few doses of grey powder. He was put upon a course of mercury and showed some improvement, but died of some affection of the lungs three or four years afterwards.

The difficulty in clearing up the diagnosis in this case lay in the inexpediency of questioning the parents as to any history of venereal infection.

Influence of Syphilis on Inflammatory Conditions.

The next case illustrates the manner in which syphilis may lie absolutely dormant until something occurs to wake the spirochætes into activity. I have already mentioned a case in which this happened in acquired syphilis. The following occurred in the inherited form.

CASE 5.—A carman, aged 24, who had married at the age of 18, and had always considered himself healthy and free from any suspicion of venereal disease came under my care some years ago. His wife was healthy and had borne him two healthy children without any miscarriages. Neither he nor his wife nor his children had ever been treated for any illness so far as he knew. One day he crushed his arm between two vans; the injury was not very severe, and the skin was not broken, but the arm swelled and he had to take sick pay because he could not use it, and this meant short rations. He very soon developed an ulcer on the side of the neck. It had a serpiginous edge and was sufficiently troublesome to make him apply for relief at the hospital. It was then noticed that he had a tender, boggy, and fluctuating swelling over the central area of the left parietal bone. The left elbow, the site of the original injury, could not be bent beyond an angle of 75°, nor could it be fully extended. The lower half of the left humerus was irregularly thickened and nodular. There was also a thickening of the upper part of the radius and ulna. The girth of the left humerus just above the condyles was three-quarters of an inch greater than that of the right humerus at the same point, but the bone was not lengthened and there was only slight tenderness on pressure. The skiagram showed a characteristic gummatous infiltration of the left humerus, which was clearly the seat of periostitis. There was evidence of a similar periostitis along the ulna, but to a lesser extent. The patient was put upon a course of mercury and potassium iodide, and within a month the man had improved so greatly that he returned to his work.

The true reading of this case I take to be somewhat as follows: The patient had suffered from inherited syphilis, but the manifestations had occurred when he was so young and had been so slight that he had never heard of them from his mother. The spirochætes had remained undisturbed—as was shown by his healthy wife and children—until the slight accident had liberated them and the privation caused by the short rations due to unemployment had made his tissues more vulnerable. Hence the ulceration of the skin and the gummatous inflammation of the periosteum and pericranium. The activity of the spirochætes, however, was not very virulent, as rapid improvement took place under the influence of mercury. Supposing the man had not injured his arm, it is probable that there would have been no re-awakening of the spirochætes; but there is no assurance that as he gets older and his tissues undergo senile changes he will not suffer from further manifestations. The appearance of the ulcer and the pericranial inflammation enabled us to arrive at a correct diagnosis, for it would have been quite easy—with his negative history—to have believed that he had a periosteal sarcoma of the elbow following, as it is known to do, upon a slight injury.

I once had a case in which inherited syphilis exercised a marked influence on the course of a suppurating inflammation.

CASE 6.—A boy of 10 years old was admitted into St. Bartholomew's Hospital under my care suffering from a poisoned wound of the arm. It was treated in the usual way by incisions and fomentations, but for two or three weeks it continued to discharge, and made no progress at all towards repair. Looking at him casually as I went round the ward one day, he seemed to me to have rather a sunken bridge to his nose, and his complexion was more earthy than that of the usual London "guttersnipe." I told my house surgeon to get a Wassermann test done and in the meantime—as these tests were then made only once a week—to put him on a course of mercury. The result justified the suspicion, for the wound began to heal immediately and within a few days he was discharged to the Convalescent Home at Swanley. The Wassermann test, of which the report arrived after the boy had left, was, of course, positive.

The interest of the case lay in the fact that the ulceration presented none of the signs which we are accustomed to associate with syphilis. It appeared to be just an ordinary poisoned wound of the arm and yet the rapid healing under mercury showed that it had hung fire owing to the syphilitic infection. We ought to have been put on the alert by the syphilitic facies, but the sunken bridge of the nose and the earthy complexion were not more marked than is often seen in puny children. This case is an example of the manner in which a syphilitic infection modifies inflammation, fortunately in this particular case only in the way of making it more chronic than it would otherwise have been. But it has long been known that syphilis—both in its active and passive stages—often causes an inflammation to pursue a very violent course and prepares the tissues to allow pyogenic organisms to run riot. Phagedæna, as we now see it, only occurs, I believe, in those who have a positive Wassermann reaction.

Syphilis Simulating Surgical Tubercle.

Syphilis of joints sometimes simulates tuberculous disease sufficiently closely to allow of a mistake being made by those who are accustomed to see much tubercle and little syphilis. Here is an instance :—

CASE 7.—A boy, aged 14, came under my care on account of an inflamed knee. He had suffered from diphtheria four months previously and a month later sores appeared on his body. He had been limping for a month before I saw him. The ankle-joint of a younger brother had been excised, presumably because the surgeon thought he had tuberculous arthritis. My patient's complexion was muddy; scattered over his trunk, limbs, and scalp were patches of superficial ulceration covered with thick scales and raised crusts. His voice was husky, but his teeth were sound and well-shaped. There was no history of keratitis, nor any signs of present or past iritis. The glandulæ concatenatæ on both sides of his neck were slightly enlarged. The right knee was affected with synovitis, and there was a little synovial fluid in the left knee-joint. The synovial membrane was thickened in both joints, the swelling being especially marked at the sides. The boy said that his knees sometimes throbbed at night, but unless the joints were moved he did not complain of pain and he had never been wakened at night by any starting pains. The patient was brought by his mother, who presented such obvious signs of tertiary syphilis that he was at once ordered three-grain doses of grey powder twice a day. In ten days' time his complexion had cleared and his voice was less husky. There was also less synovial effusion in the right knee, whilst the left appeared to be normal. Three weeks later he returned complaining of much more pain. There was increased swelling of both knees with some synovitis of the elbows. On inquiry he confessed that, boy-like, he had not taken any powders as the pain was better. He was told to continue the medicine and he rapidly got well. I watched him for two or three years, but he had no relapse and was working steadily as an errand-boy.

It would have been quite easy in this case to have treated the boy for tuberculous arthritis, as one was biased by the fact that a brother had lost one of his ankle-joints with a diagnosis of tubercle. It was only the fortunate appearance of his mother on the scene and her obvious syphilis that made a more careful examination desirable. The ease with which the boy walked, the absence of starting pains at night, and the limitation of the inflammation to the synovial membrane made the diagnosis clear, and saved the boy from prolonged treatment with immobilisation and possibly an operation.

"Clutton's joints," or those cases of chronic painless synovitis with effusion which are so frequent in school children, are now usually recognised, though they were formerly mistaken for tuberculous synovitis and were treated with cod-liver oil and immobilisation of the joints.

Syphilis and tubercle are often inextricably mingled, but sometimes they run separate courses although they are co-existing. The general deterioration of the tissues produced by the spirochætal infection appears to make them especially vulnerable to the tubercle bacillus, a fact long recognised by the French physicians, who have said, "Syphilis makes the bed on which tubercle is born." Here is an instance where we seemed to have the tuberculous infection taking place under our very eyes :—

CASE 8.—A man, aged 56, was admitted to the hospital suffering from chronic glossitis. Examination showed that the tongue was ulcerated over its whole surface; it was thickened and the edges were indented by the teeth. The submaxillary and submental lymphatic glands were enlarged. The patient had suffered much pain and said that he had contracted syphilis 20 years previously, and that he had taken a short course of mercury for its cure. He had been a great smoker and had taken a good deal of alcohol. The tongue had been inflamed for about four years, but only during the last few months had it become so painful as to make him seek advice. A Wassermann test was positive, and he was ordered intravenous injections of salvarsan followed by a course of mercury and iodide of potassium. In a short time his tongue became less painful, there was not so much salivation, and the indentation at the edges disappeared. The ulceration, however, did not entirely disappear, and the enlarged lymphatic glands became no smaller. He was sent home with instructions to continue the medicine, to paint his tongue with pigt. mandl., and to return if the inflammation did not get better. He came back in six weeks' time, when there was clear evidence that the ulceration was deeper and more extensive, although the chronic inflammation of the tongue had improved. A microscopical examination of the ulcerated portion showed that it was undoubtedly carcinomatous. The whole tongue, therefore, was amputated, after a laryngotomy had been performed, by splitting it down the centre and removing each half separately. Some enlarged glands were removed at the same time. The pathological report stated that the tongue was epitheliomatous, but that the lymphatic glands were inflammatory as no evidence of epitheliomatous infiltration was seen in the sections.

The patient made a good recovery and was sent home. He came back in three months' time with a large mass of inflamed glands on the right side of his neck. It was thought that this mass was due to breaking down of the lymphatic glands which had become infiltrated with carcinoma, as the neck was brawny and some deep fluctuation could be felt. The patient, however, was in good health, had a clear complexion, and had not lost weight. The stump of the tongue was soundly healed and showed no sign of recurrence. An incision into the neck allowed the escape of thick pus, which was not blood-stained and was odourless. Further dissection showed that some of the lymphatic glands, but not all, had suppurated. Two of the enlarged glands, which had not suppurated, were removed for microscopical examination. The sections showed that they were tuberculous without any invasion of cancer and without any thickening of the smaller blood-vessels, as should have been the case had the enlargement been due to syphilis. The patient again made a good recovery.

The case is particularly interesting from the fact that the patient was suffering from three constitutional diseases—syphilis, cancer, and tubercle. The combination of cancer and tubercle is so rare that Sir James Paget used to teach us at the end of a life of extensive clinical experience that he believed the two diseases were mutually antagonistic and could not exist together, at any rate that he never recollected to have seen such a combination occurring in the same patient at the same time.

Conclusion.

I have purposely written this short paper from the clinical aspect and have attempted to consider the subject under the following heads. Mistakes due to :—

1. The unlikelihood of infection owing to the social position of the patient or the unusual mode of infection.

2. Prolonged latency of symptoms generally in connexion with inherited syphilis, as in cases where the patient has no stigmata, has married, and has had healthy children; or, in the acquired disease, where very many years have elapsed since the patient had any signs. Under both conditions increasing age or slight injury appears to be the determining cause of the syphilitic manifestation.

3. The modifying effect of syphilis on other forms of infective inflammation, whether it be tuberculous, phagedænic, streptococcal, or staphylococcal.

I have purposely avoided saying anything about those cases where syphilis is merged in aneurysm, aortic disease, cancer of the tongue, tabes, and iritis.

The conclusion at which I have arrived is that syphilis affects a sufficiently large number of the population to make it worth while to bear in mind the possibility of a spirochætal factor in many of the obscure and chronic inflammations which do not respond to the ordinary methods of treatment.

ON THE RELATION OF THE THYROID GLAND TO THE FEMALE PELVIC ORGANS.

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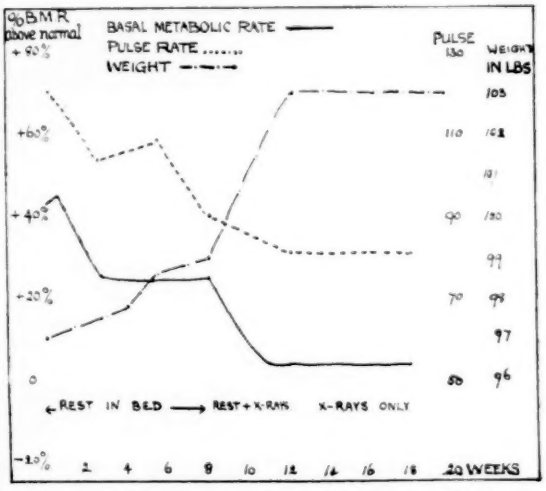
With a Note on the X Ray Treatment by G. HARRISON ORTON, M.A., M.D.

Gaskell[1] first pointed out a similarity between the uterine glands of *Scorpio* and the thyroid gland of the lowest vertebrate, *Ammocœtes*; it is accordingly an act of piety to recall his observations as a preface to this research. A vague conception of the relationship with which this paper is concerned, founded upon certain familiar illustrations, has gradually taken shape in the minds of clinicians, for the pelvic sequelæ of perverted thyroid function are everyday clinical phenomena. The constant accompaniment of amenorrhœa and sterility with cretinism, and the tendency of menstruation to be scanty or absent in myxœdema, are examples of the inhibition of genital activity in the absence of a normal thyroid secretion. A further illustration of the effects of hypo-thyroidism is provided by the development of fœtal abnormalities such as the harlequin fœtus,[2] while in the other direction of thyroid excess there are the menstrual disturbances of Graves's disease, and as will presently appear, a definite form of functional menorrhagia directly attributable to hyper-thyroidism. Again, the simple enlargement of the thyroid at puberty and during pregnancy has been accepted as evidence of an increase of functional activity of the gland at a time when there are considerable changes taking place in the growth and development of the ovaries and uterus. The accessibility of the thyroid gland to clinical investigation has ensured the popularity of observations of this nature, and attempts have even been made to establish a parallel between the severity of the vomiting of pregnancy and the size of the gland. Whether such a parallel does in fact exist will be a matter for discussion later. Finally, Blair Bell[3] and others have brought forward experimental evidence that uterine atrophy follows extirpation of the thyroid in animals. These are the more salient observations that have helped to define the relation between the thyroid gland and the pelvic organs. It is the object of the present research to examine and to expand part of this evidence by means of more exact methods which have recently become available.

The Basal Metabolic Rate and the Information it Provides.

The particular procedure made use of in this research is the measurement of the basal metabolic rate by the method already described by one of us.[4] By basal metabolism is meant the amount of oxidation taking place in the body in the post-absorptive condition—that is, after twelve hours' fast, and at complete rest. It is measured by the rate of production of carbon-dioxide from the oxygen inhaled, or by the heat produced. The figure taken in proportion

FIG. 1.

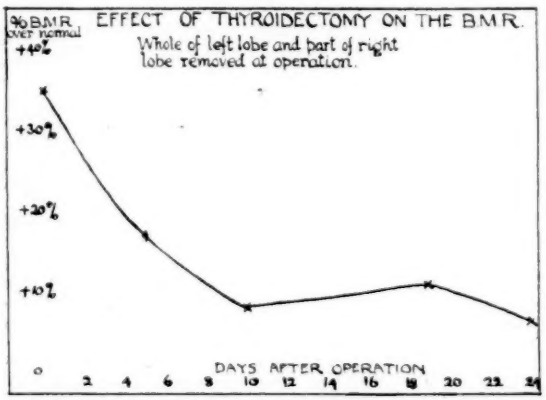


Showing the effect of rest and X rays on the basal metabolic rate.

to the body-surface area is constant for normal people of the same sex and age. Concerning that method this may be said: the purpose of this paper is to put forward an argument for the use of another method of precision in carrying out investigations on the endocrine glands. We boldly cherish the hope that certain workers in this field will presently contract a habit of submitting the somewhat romantic conclusions to which they have from time to time given birth to the dry criticism founded on an exact method of experimental verification, so that in the issue they may come to exercise a prudent economy in speculation. In that spirit of caution it is only right to question how far this particular method provides an accurate means of measuring metabolism at rest on an empty stomach, and if that question can be answered satisfactorily, to inquire what particular information these metabolic measurements furnish. With regard to the first question, care is necessary in mixing thoroughly the air in the bag before sampling, and in the choice and keeping of the valves. But this is to ask for no more than technical efficiency, without which no laboratory experiment has any value. The mere enumeration of two possible sources of experimental error provides, however, a pretext for supporting the hope of Boothby[5] that "the results of indirect calorimetry will not be thrown into general discredit by a neglect of the details requisite for obtaining a true basal metabolic rate." It is more relevant to inquire whether the metabolic figures are constant from day to day, or whether variable ventilation dependent on some element of nervous instability may introduce a source of error, so that two readings on successive days may show different results. In our experience of this method during the past 18 months it has been easy to overcome difficulties of this nature. More debatable ground is covered by the assumption that the minimal heat production per square metre of body surface is the same no matter what the surface area of the subject. Into these and kindred details

we cannot here enter. We must be content to record the conviction, based on an acquaintance with the method extending over 18 months, that it does in fact provide an accurate means of measuring basal metabolism. We have still to consider what particular information these metabolic measurements give; in other words, we have to inquire how far the suggestion that the basal metabolic rate may be accepted as an index of the functional activity of the thyroid gland is supported by the results of our investigations. A prudent scepticism would turn the question. Does the figure representing the basal metabolic rate rise or fall with a corresponding rise or fall in the functional activity of the thyroid gland as measured clinically? Our figures in myxœdema and in Graves's disease were examined for an answer. On the one hand, in a number of patients suffering from myxœdema the effect on the basal metabolic rate of administering thyroid extract had been noted. The figure rose until it reached a number which, by estimation of many controls and by comparison with the results of other workers in America, we have come to accept as within normal limits. By means of frequent measurements of the basal metabolic rate the exact dose of thyroid extract necessary in each individual case to maintain the rate within the normal limits was then ascertained. It was found that if the dose were excessive the rate continued to rise, while if an insufficient amount were given the rate fell below normal. And these differences in the basal metabolic rate figures were found to be the expression of corresponding differences in the clinical state. On the other hand, in Graves's disease, where treatment, whether in the hands of physician, radiologist, or surgeon, was successful as measured by clinical standards, the improvement in the patient's condition was accompanied by a fall in the basal metabolic rate. For example, in a considerable number of

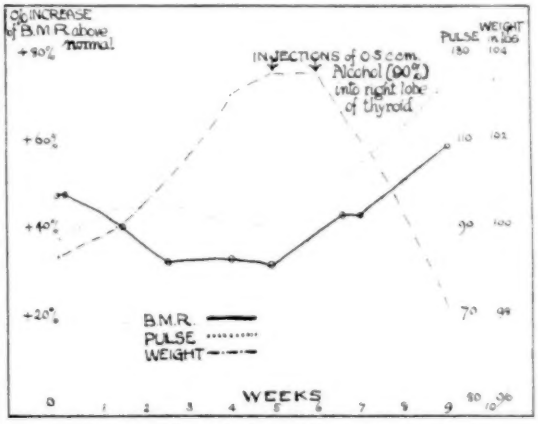
FIG. 2.


% B.M.R. over normal
EFFECT OF THYROIDECTOMY ON THE B.M.R.
Whole of left lobe and part of right lobe removed at operation.
+40%
+30%
+20%
+10%
0
2 4 6 8 10 12 14 16 18 20 22 24
DAYS AFTER OPERATION

Showing the effect of thyroidectomy on the basal metabolic rate.

patients the effect of prolonged rest in bed on a standard diet, with nothing but medicinal treatment, was checked by repeated measurements of the basal metabolic rate. In general the rate fell, but after an interval of time, varying between two and four weeks, a level was found and no further fall occurred. That level was commonly well above the normal base-line. The early fall and its subsequent arrest at an abnormal figure run parallel with the relief of symptoms after rest, and their later persistence though less severe in degree. The effect of exposure of the thyroid gland to X rays was less constant. We are, however, here concerned not with the classification of cases of Graves's disease according as they react or do not react to X rays, but only with the fact that a certain proportion of those suffering from this disease do improve clinically after such exposures, and that improvement proceeds pari passu with a fall in the basal metabolic rate. Fig. 1 is a graphic record of the successful intervention of the radiologist. The basal metabolic rate as the result of rest in bed at first fell sharply from + 45 per cent.* to + 25 per cent. No further fall occurred and for nearly six weeks constant readings were obtained. The thyroid gland was then exposed to X rays and the result is seen in a further sharp fall to within normal limits. Incidentally, perhaps, the most convincing illustration of the

FIG. 3.



Showing the effect of alcohol injections into thyroid gland on the basal metabolic rate.

influence of X rays alike on the basal metabolic rate and on the clinical condition was furnished by those cases of hyperthyroidism, accompanied by functional menorrhagia, to which we shall presently refer, patients treated without rest in bed, leading in fact their normal lives except for X ray treatment. Finally we have the effect of thyroidectomy on the basal metabolic rate. Here our figures—not broad-based on the same abundant material—add nothing to Boothby's [6] results. He found that in 72 cases of primary thyroidectomy the average basal metabolic rate before operation was + 38 per cent., and after operation + 8 per cent. The dramatic influence of surgical measures on the basal metabolic rate, of which Fig. 2 is a fair sample, is coupled with an equally striking amelioration of symptoms.

These results, illustrating the relation between the functional activity of the thyroid gland as measured clinically and the basal metabolic rate, are fortified by an observation of the effect on the rate of injecting 90 per cent. alcohol into the gland, graphically set forth in Fig. 3. The initial effect of rest is seen in a fall in the basal metabolic rate from + 47 per cent. to + 32 per cent. on the seventeenth day. The rate remained about that level for another 17 days when, five weeks after admission to hospital, the physician in charge decided to inject 90 per cent. alcohol into the gland. The results on the basal metabolic rate, on the pulse, and weight, are seen in the figure, and were accompanied by an exacerbation of all symptoms.

But even if we were convinced that the basal metabolic rate is normally an index of the functional activity of the thyroid gland, we have yet to consider how far the high basal metabolic rate of pregnancy (see Table I.) is due to increased activity of the gland, and how far to the growing demands of the fœtus and placenta. It is necessary to admit immediately that discussion on this point is hardly profitable in the present state of our knowledge, and we may therefore without further delay give in tabular form measurements of the basal metabolic rate in pregnancy. From this table patients with abnormal conditions of pregnancy have been excluded. When we began this

* + 45 per cent. signifies here and throughout this paper 45 per cent. above the average rate in normal subjects of the same sex and age.

investigation it was hoped that measurements of the basal metabolic rate would be made in sufficient number in such abnormal conditions of pregnancy as toxic albuminuria, eclampsia, and the like, but difficulties were experienced in collecting the necessary material both in normal and in abnormal pregnancy; in the former particularly in the early months. These difficulties were only partly overcome, and in consequence this particular section of our investigations stretched over more than a year. Meanwhile, in July Baer[7] published in America some measurements of the basal metabolic rate in the weeks intervening between the thirty-fourth week of pregnancy and the tenth day of the puerperium. He found the basal metabolic rate raised above normal in all his cases, his average reading being somewhat higher than our series. Otherwise our results confirm his.

TABLE I.—*The Basal Metabolic Rate (B.M.R.) in Pregnancy.*

Case	Age.	Parity.	Gestation (weeks).	Per cent. of normal B.M.R.	Case	Age.	Parity.	Gestation (weeks).	Per cent. of normal B.M.R.
1	35	iv.	12	+ 4·0	15	28	iii.	28	+11·3
			16	+10·8					
2	24	ii.	12	+24·8	16	40	vi.	28	+28·7
3	29	i.	16	+ 8·4	17	38	x.	29	+15·3
			16½	+ 9·2	18	36	iii.	30	+21·1
			17½	+14·3	19	32	v.	30	+ 4·9
4	34	i.	18	+26·6				34	+10·0
			26	+21·0				38	+ 6·0
			30	+24·0	20	33	iv.	30	+21·9
5	28	iv.	22	+17·0				37	+25·0
			30	+19·0	21	28	i.	30	+18·0
6	20	i.	24	+14·0				39	+25·0
			28	+15·0	22	26	vi.	31	+17·8
			34	+17·0	23	38	—	31	+27·0
7	25	i.	26	+11·0				36	+31·0
			30	+ 7·1	24	26	i.	32	+16·0
			34	+15·0	25	21	i.	32	+ 9·0
8	44	x.	28	+17·8	26	27	i.	34	+27·0
9	21	i.	28	+15·7	27	21	i.	34	+10·5
			32	+19·7	28	22	i.	35	+17·0
10	23	i.	28	+ 2·9	29	19	ii.	36	+11·5
11	23	i.	28	+ 5·0	30	25	i.	36	+13·8
12	24	—	26	+30·7	31	24	i.	36	+28·5
			32	+31·0				40	+28·4
13	22	ii.	26	+18·0					
14	24	i.	28	+16·0					

From the figures in Table I. it will be seen that the basal metabolic rate is in the great majority of cases, but not in all, raised above that normally found in the non-pregnant woman. We have considered the figures in this table, together with a number of readings in abnormal cases in relation to various conditions of the mother, and give the conclusions below.

Apparent Independence of the Clinical Condition of the Pregnant Woman and Her Basal Metabolic Rate.

Vomiting of Pregnancy.—All degrees of severity of vomiting were met with, in addition to a number of patients in whom it was entirely absent. Table II. brings out the independence of the basal metabolic rate and the degree of vomiting.

Table II. is set out in full because the figures are interesting in view of the claim of Albeck[8] that the degree of vomiting of pregnancy is related to variations in the functional activity of the thyroid as judged by clinical estimations of the size and consistence of the gland.

Toxic Albuminuria.—Further information is required under this heading, but the evidence gathered in the course of this investigation, so far as it goes, runs parallel with our other results. In one patient, for example, in whose case an unfavourable prognosis, based on the clinical condition and on the renal efficiency tests, had been given, the basal metabolic rate was +13, while in another, with the typical signs and symptoms of pre-eclamptic toxæmia, the basal metabolic rate showed the high value of +32.

Size of the Thyroid Gland.—It is unnecessary to give a number of tables to bring out in detail this apparent independence of the basal metabolic rate and other conditions of the mother and child, since they would be found to bear the same complexion as Table II.

TABLE II.

Degree of vomiting.	Basal metabolic rate.
No vomiting at any time during pregnancy.	+3, +21, +5, +10, +16, +17, +11, +11, +28, +23, +15, +18.
Slight early vomiting.	+27, +26, +3, +14, +18, +14, +5, +22, +18, +17, +11, +11.
Severe vomiting.	+31, +13, +8, +25, +4, +11, +18, +16, +9, +16.

For example, observations were recorded of the size of the gland, and it was found impossible to establish any parallel between this and the basal metabolic rate. It is interesting in that connexion to recall that Herring,[9] questioning the accepted view that the human thyroid enlarges during pregnancy, brought forward experimental evidence that the occurrence of pregnancy in rats does not lead to any such enlargement of the gland, but rather to a slight diminution in its size. Herring, however, found in the same animals a notable diminution in the weight of the pituitary body during pregnancy, whereas, as he points out, Erdheim and Stumme[10] have demonstrated that the human pituitary is enlarged during the period of gestation, so that it is prudent to be circumspect in arguing from rat to man.

Parity.—Here, too, the fact of previous pregnancies did not appear to influence the basal metabolic rate. Primigravidæ ranged between +3 and +32, while multiparæ showed similar variations.

Condition of the Child.—The weight and condition of the child were recorded in 28 cases. Of these, 2 were still-born, on account of obstetrical conditions, 3, whose mothers gave rates of +15, +19, and +4, were described as fairly well nourished, while the remainder were in good condition and were born of women showing the same widely different rates.

These fluctuations in the basal metabolic rate seem to point to a complete independence between the basal metabolic rate and the clinical condition of the mother and child. But as far as the mother is concerned this may be apparent and not real. Further work is necessary to establish the precise part, if any, played by the varying response of the female organism to a toxin in producing this disparity. Concerning the child, certain histological observations may be of interest. Sections of the thyroid gland of 11 healthy full-term fœtuses were examined by us, and from our note-books we extract the following:—

(*a*) The degree of development as measured by vesicle formation and colloid content is variable.

(*b*) In six cases the sections show masses of loose epithelial cells separated by very vascular trabeculæ. Here and there in some of the sections there is a tendency to an arrangement of cells around a central space that contains no colloid. Fully formed vesicles first begin to appear in the periphery of the gland.

(*c*) In three cases the greater part of the cell mass is organised into very small hollow vesicles, which, except for a few scattered peripheral vesicles, contain no colloid.

(*d*) Two cases only show well-formed colloid containing vesicles resembling in appearance an adult thyroid.

All the sections are extremely vascular.

Persistence of Raised Basal Metabolic Rate of Pregnancy after the Puerperium.

The basal metabolic rate of six patients was taken at intervals of two days throughout the puerperium. In three the rate at the end of a fortnight after delivery had fallen respectively from +16 to +6, from +23 to +9, and from +32 to +6, the final figures being within the normal limits of the non-pregnant woman. In the other three, one, with a figure of +18 in the last week of pregnancy, showed a transient rise of seven points during the first two days after delivery, followed by a gradual decline to +12·5 on the tenth day, remaining at a rather higher figure during subsequent examinations; a second failed to fall below +14 while under observation; in the third the rate recorded before delivery, +14, rose to +22 on the fourth day, and fell to +19 on the sixteenth day, maintaining approximately this figure throughout the puerperium. It would seem, therefore, that although we are manifestly unable from so small a number of cases to establish the normal behaviour of the basal metabolic rate after delivery, yet in these few figures there is an indication that the high basal metabolic rate of pregnancy may persist after the puerperium. In this connexion, the occasional onset of Graves's disease following parturition has a special significance. It is possible, of course, that when these three cases are followed for a longer period, the basal metabolic rate will subside to a normal level. In two of the three, indeed, the rate at the end of the eighth month after confinement had fallen to +10 and to +12. On the other hand, it may be that in a small number of patients the abnormally high rate of pregnancy persists after the puerperium and may give rise to a pathological condition. This suggestion, and it is no more than a suggestion, receives some support from a recent examination of five patients who dated their menorrhagia from their last confinement, 2 years, 7½ years, 10 months, 7 years, and 7½ years ago, and in whom the basal metabolic rate was respectively +16, +18, +17, +19, and +18. In the five patients the uterus was considerably smaller than normal, a feature that sharply distinguishes them from the usual type of post-partum menorrhagia wherein an inflammatory lesion, chronic endometritis, the sequel of an infection during labour, is discovered in a pelvic examination. A hypothesis based on such slender premises may require revision, but it is perhaps legitimate to suggest, as an incentive to further work, that in these patients the normally high basal metabolic rate of their last pregnancy had abnormally persisted, giving rise to a menorrhagia without pelvic signs. The question will be asked whether these patients were suffering from the effects of sub-involution of the thyroid gland, the excessive secretion of which gave rise to menorrhagia. We have, therefore, immediately to consider what further justification we possess for connecting excessive thyroid activity with menorrhagia.

Hyperthyroidism as a Cause of So-called Functional Menorrhagia.

In the first instance, in mapping a plan of this research, it appeared that if menstruation is an expression of the physiological action of the endocrine secretions, then a study of menstrual disorders in patients in whom the symptoms could not be related to local pelvic lesions, might supply evidence of hyperthyroidism. And since clinical experience has associated myxœdema and cretinism with amenorrhœa, the particular disorder selected for investigation was that which is termed functional menorrhagia, to lay emphasis on our failure to find any structural defect in the pelvis to account for the condition. Gynæcologists are familiar with a group of patients answering this description, who have submitted for many months and even years to the ordinary medicinal measures and often to curettage of the uterus, without obtaining any relief from excessive monthly loss plainly independent of any demonstrable pelvic abnormalities. To examine individual members of this group for evidence of hyperthyroidism was clearly the next step in tracing the relation between menorrhagia and excessive thyroid activity. The clinical picture, however, was not found to have any sharp outlines. The patients were usually young unmarried women between 20 and 30 years of age, who gave a history of excessive menstruation for some years, and occasionally dating from puberty. In the majority there was the same story of prolonged and ineffective treatment by drugs and by operation. A tendency to sweat too readily was common, and loss of flesh or a constant low weight was the rule. With this was associated a loosely-knit group of symptoms, insomnia, irritability, and the like, that may be covered by the term nervous instability. Briefly there were some signs and symptoms suggestive of hyperthyroidism, though none with the emphasis characteristic of an established case of exophthalmic goitre; and the interesting question arises whether these patients are in reality suffering from that disease in an early phase. It is relevant to point out that some had suffered from menstrual excess for many years without having developed Graves's disease as commonly accepted, and that a constant and outstanding symptom is uterine hæmorrhage, a condition by no means the rule in Graves's disease, either at its onset or during its subsequent course. The size of the thyroid gland and the pulse-rate were not more helpful in unmasking the excessive activity of the thyroid. Occasionally the gland was enlarged sufficiently to impart a certain fullness to the neck, but more often no swelling could be felt. Moreover, the size of the gland as judged by inspection and palpation bore no relation either to the symptoms or to the basal metabolic rate. The pulse-rate varied little from the normal. It was soon apparent that proofs of hyperthyroidism must be sought elsewhere than in this nebulous picture. Accordingly we have attempted to establish the presence of hyperthyroidism by two observations, firstly by the reading of the basal metabolic rate when the patient came under treatment, secondly by the fall of that rate if raised to a normal figure and the concurrent relief of uterine hæmorrhage after the application of X rays to the thyroid gland. Incidentally, those patients whose symptoms failed to respond to the treatment, or who relapsed after improvement, showed a corresponding behaviour of their basal metabolic rate. Table III. sets forth the basal metabolic rate, accompanied by a brief clinical note, in 28 patients with functional menorrhagia with the results of X ray treatment after the rate is raised.

Of the 29 cases of functional menorrhagia given in Table III., 22 therefore had a raised basal metabolic rate, while seven were normal or below normal. Of the 22 with a raised rate, 14 were treated with X rays; in 10 of these all the symptoms disappeared. In one the symptoms were considerably relieved, while in three no benefit whatever resulted from the treatment. In one of the three, with a basal metabolic rate of +23·1, the patient after two exposures ceased to attend for treatment so that no conclusions can be drawn. But in another, with a basal metabolic rate of +19·4, an unusually prolonged and thorough treatment in the X ray department brought no relief, nor was there any appreciable drop in the basal metabolic rate. It would, therefore, appear that not every case of functional menorrhagia with a raised basal metabolic rate is cured by X ray treatment. This fact is scarcely surprising in view of the frequent failure of X rays to control the excessive thyroid activity in Graves's disease. What is surprising in the light of experience of that disease is the proportion, of cases of this group of menorrhagia, amenable to X ray treatment. Eight of the 21 are at present undergoing X ray treatment, but sufficient time has not yet elapsed to estimate the result. Of the seven cases with a normal basal metabolic rate, five were closely associated with puberty, and were examined respectively within three, four, four, six, and eight months of the first period. The remaining two patients whose basal metabolic rate was within normal limits gave a history of irregular floodings since puberty, which preceded their examination by two and a half and three years. It should be pointed out that some of the patients with a raised basal metabolic rate, whose symptoms disappeared after X rays,

TABLE III.—THE BASAL METABOLIC RATE IN PATIENTS WITH FUNCTIONAL MENORRHAGIA, WITH THE RESULTS OF X RAY TREATMENT WHEN THE RATE IS RAISED.

Case.	Age.	Before treatment. B.M.R.	Before treatment. Clinical notes. M. = menorrhagia. D. = dysmenorrhœa.	After treatment. B.M.R.	After treatment. Clinical notes. Menst. = menstruation.
1	27	+19·6	Severe hæmorrhage. Curetted with no improvement.	+6·1	Normal menst.
2	26	+18	M., D. Thyroid enlargement neck 13 in.	−1·3	Normal menst. delayed 10 days. Neck 12½ in.
3	28	+16	Serious floodings; thyroid enlargement.	+10	Normal menst. of 5 days.
4	28	+46	Intractable M. Drugs and curettage.	+12	Normal period of 4 days.
5	28	+23·5	Intractable M. D. Loss of weight. Drugs and curettage	+ 2	Normal periods of 3 days; no pain.
6	41	+20·5	7 to 10 days free loss every 2 or 3 weeks for years. Weight 5 st. 21 lb.	+ 8	Much better; free loss for 3 days only. Interval 3 weeks. Weight 6 st. 3 lb.
7	26	+20·4	M., 7 days. Inability to work; drugs useless.	+ 8	Menst. normal; loss 5 days.
8	21	+23	M. and D.	+ 8	Loss scanty; still has pain.
9	25	+21	M.	+ 2	Normal menst.
10	18	+19	M., 9 days each period; irregular.	+ 7	Normal menst.; quite regular.
11	25	+18	M. since confinement; loss for 8 to 10 days; uterus very small.	+ 7	Menst. for 4 days; loss normal.
12	20	−19·4	M. and D. since puberty.	+16	No improvement.
13	17	+23·1	Puberty at 16, free irregular loss since; last period 8 weeks duration. Slight enlargement of thyroid.		,,
14	14	+11·2	Puberty 1 year ago; excessive loss every 2 or 3 weeks. Thyroid imparted slight fullness to neck.	−10	No better.

The following cases only recently came under observation. They have been sent for X ray treatment, but sufficient time has not elapsed to judge the effect of this treatment on the basal metabolic rate and on the clinical condition.

Case.	Age.	B.M.R.	Clinical notes.
15	23	+23	Excessive monthly loss for 8 days with clots and pain.
16	38	+24	Severe loss for 5 days each month for 7 years.
17	30	+15	Irregular loss every 2 weeks for 3 days; amount not excessive. Graves's disease in 1918.
18	24	+22	M. Very severe monthly loss, diminishing since 1919. Curetted with no effect.
19	25	+16	M. since confinement 2 years ago. Uterus small.
20	33	+19	Excessive menst. for 7 days every 2 weeks since confinement.
21	29	+18	Excessive menst. since confinement. Curetted with no effect.
22	38	+17	M. dating from last confinement 10 months ago; uterus smaller than normal.
23	15	+ 6	Continuous loss for 3 weeks each month since puberty 8 months ago. Thyroid causes visible fullness of neck.
24	14	Normal (0)	Very severe bleeding, requiring plugging of uterus on one occasion since puberty 3 months ago. Moderate-sized goitre.
25	13	−20	Severe loss for 7 to 14 days since puberty 4 months ago. Thyroid not enlarged.
26	13	− 1·5	Free loss for 10 days since puberty 4 months ago. Thyroid not enlarged.
27	13	− 6	Free and irregular loss since puberty 6 months ago. Thyroid not enlarged.
28	17	Normal (0)	Irregular floodings since puberty at 14. No enlargement of thyroid.
29	18	+ 2	Irregular and free loss since puberty at 15½. Now almost continual loss.

Remarks.—CASE 1. Later relapse with excessive loss accompanied by a rise in the B.M.R. to +22·7. CASE 3. Previously X rayed 2 years ago with temporary cure. A relapse measured and treated as here stated. CASE 4. Menorrhagia dated from a shock 3 years ago. Curetted 1 year after onset. CASE 12. Since curetted. Scrapings normal. CASE 13. Ceased attending for treatment after two exposures.

also dated their menorrhagia from puberty. These two cases, however, illustrate the danger of X ray treatment when it is not controlled by measurements of the basal metabolic rate, since they differed from successful cases of the series only in the fact that their basal metabolic rate was normal. On that point we would lay emphasis.

It is far from our desires to claim authorship for the suggestion that X rays may be employed beneficially in the treatment of a certain form of menorrhagia. For the relief of that condition proposals have been made founded on the assumption by some that it is due to hyperthyroidism, and by others that it is due to hypothyroidism. The purpose of this paper is to provide means which will render unnecessary such dangerous empiricism. For in the course of the present investigation it has been made clear that the growing practice of advocating X ray treatment of the thyroid gland on insufficient clinical grounds can only end in disaster. The danger inherent in the use of X ray applications to the thyroid if uncontrolled by metabolic measurements, which in these cases give warning before symptoms of hypothyroidism appear, is illustrated by a case showing the potent effect of these applications. A patient who had by this means become freed from menorrhagia failed to report to us, but continued her visits to the X ray department. Later she came complaining that her periods had gradually diminished and then ceased altogether. On taking her basal metabolic rate at this stage it was found to be −13; in addition to her amenorrhœa she was rapidly putting on weight and it was considered necessary to give her thyroid extract. In functional menorrhagia the clinical symptoms pointing to hyperthyroidism are altogether too vague and intangible to provide in themselves an excuse for active measures designed to lessen the supposed excessive activity, and even if hyperthyroidism is actually present we cannot with impunity carry out prolonged X ray treatment without from time to time reassuring ourselves by measurements of the basal metabolic rate that the thyroid activity is still excessive. We need proof in the beginning that there is hyperthyroidism, and warning later when that hyperthyroidism has been brought within normal limits, so that a thyroid gland of normal functional activity may not be submitted unnecessarily to further X ray exposures, which can only end in producing a condition of hypothyroidism more hurtful to the patient than the primary menorrhagia.

Conclusions.

1. The basal metabolic rate is in the majority of pregnant women, but not in all, raised above that normally found in the non-pregnant woman.

2. The basal metabolic rate of different pregnant women at corresponding periods of gestation varies considerably, but we have not found it possible to trace any relation between these variations in the rate and the clinical condition of the mother. It remains to be determined if there is any correspondence between the fluctuations in the rate of the same patient at different times and her clinical state on the one hand or that of the child on the other.

3. In some patients, probably the majority, the rise in the basal metabolic rate disappears after delivery, but in a certain number of cases the high rate of pregnancy does not subside after the puerperium, but abnormally persists. The suggestion is put forward that in some of the latter cases the excessive thyroid secretion gives rise to a menorrhagia without pelvic signs.

4. Additional evidence that a high basal metabolic rate is associated with certain forms of menorrhagia is furnished by a group of cases to which the label functional menorrhagia is attached, to draw attention to the absence of any demonstrable pelvic abnormality. The cases comprising this group are resistant to all ordinary medicinal and operative measures, but

respond readily when the thyroid gland is exposed to X rays.

5. The disappearance of pelvic symptoms is coincident with a fall to the normal of the basal metabolic rate.

A NOTE ON THE X RAY TREATMENT.

We are indebted to Dr. Harrison Orton for details of the X ray treatment. He writes: "With regard to the X ray treatment, there is not a great deal to be said at present, but it is evidently not necessary nor do I think advisable to give very large doses. All the cases described in this paper, with one or two exceptions, have been treated in exactly the same manner, the procedure being as follows: To start with, a dose of ½B or 5X is given to each lobe of the thyroid once a week for three doses, the filter being 1 mm. of aluminium and four layers of wash-leather. After this, doses of ½B are given once in three weeks through a filter of 3½ mm. of aluminium and wash-leather as before. The rays employed should be hard, with a reading not less than 9 on the Bauer qualimeter. The tube used in all cases was a Coolidge medium focus, and the average number of doses required was seven to eight.

It is important that no erythema of the skin be produced, as this is likely to lead to the formation of telangiectases in the skin, which may become very unsightly. In one of the cases mentioned above, and in another case of Graves's disease treated in private, a tendency to myxœdema was observed after eight exposures such as those described above; it is advisable therefore to have the basal metabolism tested again after six exposures. It must be remembered, however, that a few cases had had considerably more than eight exposures without improvement, so that the dosage required would appear to be variable; it must be remembered, too, that a myxœdematous condition had been reported as having developed subsequently in cases of Graves's disease in which no X ray treatment whatever had been given; so that it does not necessarily follow that the X ray treatment was entirely responsible. I have no doubt, however, that the estimation of the basal metabolism from time to time will lead eventually to a much more accurate dosage being determined."

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EAST SUSSEX HOSPITAL.—This hospital at Hastings is being enlarged from 75 beds to 105. At the annual meeting of governors on May 10th it was stated that the debit balance of £1850 2*s.* 4*d.* at the end of 1921 has been increased to £2141, and that the overdraft at the bank now stands at £3573 14*s.* 7*d.* The total ordinary income during 1921 was £13,331, against £12,101 in 1920, and this satisfactory increase was largely due to the system of asking patients to contribute towards the cost of their maintenance. This brought in £1774, against £662 19*s.* 5*d.* in 1920, which was the first year of the operation of the scheme of paying patients. On the expenditure side the cost of provisions and of surgery and dispensary appliances all showed a decrease, and the average cost of each patient per week worked out at £3 10*s.* 9*d.*, against £3 12*s.* 3*d.* in 1920. The in-patients during the year numbered 1048, against 1075 in 1920, and the out-patients 4519 with 16,757 attendances, against 4285 with 51,525 attendances. A new department for the treatment of diseases of the skin was opened late in the year, but the large number of patients treated showed that the governors were fully justified in starting this clinic.

PROGNOSIS IN DIABETES MELLITUS.*

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THE presence of sugar in the urine is looked upon as a grave symptom, being an important feature of diabetes mellitus. Yet glycosuria is often discovered accidentally, and it is known that certain people have continued to pass sugar in the urine for many years without detriment to their health. It is, therefore, important to decide whether a case should be diagnosed as mere glycosuria or as diabetes; in this extremely difficult matter it is probably best to accept the more serious view and treat accordingly. A very large number of conditions may give rise to the appearance of sugar in the urine, but the mechanisms by which glycosuria can be produced are probably few in number.

(1) In certain cases where the blood-sugar is normal in amount or is actually reduced, sugar may escape in the urine. The so-called "renal threshold" is low and this condition is spoken of as "renal diabetes," or negligible glycosuria.[1]

(2) Adrenalin glycosuria is a well-recognised condition in experimental animals. In man the subcutaneous injection of 1 c.cm. of 1/1000 adrenalin hydrochloride produces a sudden and often considerable rise in the blood-sugar and in certain cases may be followed by glycosuria. The degree of response depends to some extent on the quantity of glycogen stored in the liver and also on the patient's ability to store away the mobilised sugar again. Glycosuria occurs if the blood-sugar level rises above the renal threshold (normal about 17 per cent.). This type of hyperglycæmia is believed to be due to an increased breaking down (mobilisation) of glycogen stored in the liver. Cannon[2] has shown that many of the emotions act through the sympathetic system and are accompanied by an increased liberation of adrenalin and also of glucose into the blood. The glycosurias of excitement, rage, worry, and probably the glycosuria of "nervous" people, may also arise in this fashion. Adrenalin or sympathetic glycosurias are transient and intermittent in character.

(3) Hyperglycæmia and secondary glycosuria also occur when sugar is absorbed from the bowel at a greater rate than it can be stored away in the liver and muscles. This condition is spoken of as alimentary or post-prandial glycosuria. It can easily be produced in normal persons by giving a sufficiently large dose of carbohydrate in assimilable form (200 g. glucose) and it occurs more readily in cases of exophthalmic goitre and certain other lesions of the ductless glands. The same mechanism is also at work in diabetes mellitus.

Definition and Features of Diabetes Mellitus.

Diabetes mellitus might be defined as a symptom-complex resulting from an impairment of the power of assimilating carbohydrates. The central feature of the disease is a persistent hyperglycæmia, to which most of the other symptoms are due. Some lesion of the pancreas, organic and permanent or functional and temporary, probably underlies this difficulty in handling carbohydrates. No hard-and-fast line exists between "simple glycosuria" and diabetes; they are merely grades of the same condition. In simple cases the storing mechanism is weak and alimentary glycosuria occurs too readily; in diabetes the assimilating powers are still more feeble and very little storage of carbohydrates may take place at all.

Prognosis.

Prognosis demands a knowledge of the course of the disease, and the course depends largely on the severity of the condition. Herein lies the difficulty, for some cases judged to be severe clear up in marvellous fashion, while similar cases, or even apparently

* Part of a lecture on the Principles of Prognosis delivered at the University of Edinburgh to the senior students of the class of Clinical Medicine.

milder ones, may do badly. It is commonly stated that in diabetes mellitus "cure" cannot be expected; this is true when the pancreas is grossly affected and is unable to compensate satisfactorily when rested, but in functional cases and in mild organic conditions taken early there seems no reason why complete restitution may not be possible. The outlook depends on adequate treatment.

(1) *Untreated Diabetes.*—This must be considered a grave disease, frequently causing death from coma or from slow starvation, or predisposing to intercurrent conditions (pneumonia, tuberculosis, &c.), which may hasten a fatal termination. Mild glycosuria may be present for many years without causing much disability, but a fair percentage of these cases eventually become more serious and, if neglected, follow the same course as those recognised as severe from the first. Allen [3] found the same thing to be true when rich carbohydrate diets were fed to dogs in which he had produced slight diabetes by partial removal of the pancreas.

Many factors influence the course of the disease.

Age.—Cases arising after middle life generally, though not invariably, run a mild course. When the disease appears before 40 years of age it is usually more serious; if it arises during the period of growth, the outlook is exceedingly grave.

Heredity.—Less importance is attached to a diagnosis of diabetes when there is a distinct history of other members of the family having been affected. Cases occurring in nervous individuals or in members of neurotic families are usually less severe.

Sex is of little importance.

Habit of Body.—Glycosuria and a lowered carbohydrate tolerance are common accompaniments of obesity, and diabetes in such subjects is of the mild variety. Wiry people, on the other hand, usually show a severe form of the disease.

Extensive arterial degeneration and nephritis, or gangrene, add considerably to the gravity of the outlook. Clinical acidosis is extremely serious, though ketonuria may occur without causing alarm. Neuritis is troublesome, but of little consequence. Reduced resistance to infection is a constant feature of diabetes, and the presence of either acute or chronic intercurrent diseases aggravates the condition greatly.

(2) *Adequately Treated Cases.*—Since the modern methods of dealing with diabetes have been introduced the outlook of the patient has been vastly improved. Early deaths are fewer, and the patients enjoy a more comfortable and useful life. Age has no longer the same significance. The young adult has now an equal chance with the older patient, but the diabetes of children remains a difficult problem, since a proportionately larger amount of food is required to allow of growth. Gangrene and skin infections readily heal up under treatment and intercurrent diseases are less liable to appear.

It will be convenient to consider the future of the patient in two periods:—(A) during the treatment, and (B) the after-history.

(A) *Immediate Prognosis.*

The amount of improvement that may be expected during treatment, and indeed any estimate of the future, depends on the severity of the disease. The old classification of cases was based upon the glycosuria, but all diabetics can be rendered sugar-free by fasting for a longer or shorter period. No single sign or symptom is alone sufficient for prognosis. Nearly all tests fail to differentiate between permanent damage and temporary functional defect. A study of the patient's response to treatment is the best single guide to the future of the case, since it gives an idea of how much permanent damage is present. It would also be desirable to have information as to the rate of progress of the condition. The history of the case helps here. As a rule the outlook is better in those patients who seek advice in the early stage of the disease. Chronic cases tend to improve slowly.

An analysis of a series of cases recently studied has been made with a view to discovering the prognostic value of symptoms and whether any might serve to differentiate between temporary and permanent lesions.

(1) *State of Body Nutrition.*—When a case is first seen a good rough indication of the severity of the disease is the amount of weight the patient has lost; the wasting results from relative starvation, and the inability to utilise the food ingested. The cases in the present series showed reduction ranging from a few pounds to five stones. During treatment by fasting and low diet a still further loss takes place (averaging 7 to 10 lb.), but as the food is increased the weight rises again.

(2) *Urine Examination.*—(*a*) A large quantity of urine passed usually indicates that much sugar is being wasted, but it is well known that patients differ enormously in their power to excrete a concentrated urine. The polyuria disappears rapidly as the sugar decreases.

(*b*) The amount of sugar in a sample of urine may vary from mere traces up to 10 per cent., but as the percentage changes in relation to meal-times it is more scientific to consider the total quantity of sugar excreted in the urine in the 24 hours. An average case will show a loss of 80 to 100 g., but as much as 400 g. (14 oz.) has been found. The amount of sugar lost may serve as a guide to the severity of the case *at the moment*, but gives no indication of how the patient will respond to treatment. The particular case who was passing 400 g. of sugar made a very good recovery,[4] whereas those losing only 20 or 30 g. were frequently much more troublesome. During treatment all cases cease to show glycosuria after a longer or shorter fast, the average being about two days. In the early stages of dieting there is frequently a return of sugar in the urine. This may indicate that too much carbohydrate has been given (and will demand a slower advance), or the glycosuria may depend on a toxic or a nervous factor. If no infection can be discovered a nervous cause should be looked for. Various emotions, domestic or financial worries, frequently account for the temporary reappearance of sugar; they are of no consequence and do not necessitate further starving.

(*c*) Examination of the urine for ketone bodies. The presence of these substances in the urine (without clinical evidence of acidosis) is of little help in estimating the severity of the disease or in giving a prognosis. They may be present in mild cases and absent in more severe ones. (Ketonuria can be easily induced by starving a healthy individual.) On first examination ketonuria of varying degree was present in about half of the cases. It usually persisted for a very much longer time than the glycosuria (3 to 36 days)—a point of considerable importance to examiners for life insurance. In several cases ketone bodies were absent from the urine when treatment began, but appeared as soon as the carbohydrate was omitted from the diet, and remained until sufficient carbohydrate was added to the food to restore the balance. The patients who showed acetone and diacetic acid in the urine did not seem to be the worse for their presence, and it would appear that if there are no clinical evidences of acidosis and these bodies show no signs of increasing they may be disregarded, and fats need not be unduly restricted.

(3) *Blood Examinations.*—These are helpful in giving an idea of the severity of the disease, but a single examination fails to show whether the damage is temporary or permanent. The most valuable points to investigate are the fasting level of the blood-sugar, and the response to ingestion of a standard test-meal.

(4) *The Diet Attainable during Treatment.*—This is itself a guide to the future, though the level reached during the first four to six weeks is not necessarily the highest limit that may be attained. Most diabetics are able to reach 2000 calories (some much more) during the early treatment. This includes a normal quantity of protein, usually a high percentage

of fats, and a fair amount of carbohydrate. The carbohydrate at first is chiefly as green vegetable; later oatcake, porridge, and potato are cautiously added, and some patients are able to take a small amount of ordinary bread without causing glycosuria. No prognosis should be given when a case first comes under observation, opinion being reserved until the response to treatment has been studied. During the early stages of treatment the distressing symptoms quickly disappear, thirst and polyuria cease with the clearing of the urine, skin conditions and patches of gangrene rapidly improve, while neuritic pains go more slowly. The patients acquire a feeling of well-being and freedom from sugar gives them a confident outlook.

(B) *Prognosis for Period of Maintenance—After-History.*

The patient's future depends to a great extent on his intelligence and reliability. His disease must be thoroughly explained to him; he should know in a general way what foods to be careful of and how to know when he is exceeding his limit. Regular weighing once a week is necessary; loss of weight usually means glycosuria. The weight should be kept a little below what is normal for the size and age. The patient should also be shown how to recognise sugar by Fehling's method, and he should examine a sample of the 24 hours urine daily. Most patients find no difficulty in this. The diet should be so regulated that sugar does not reappear in the urine and the patient should avoid the temptation of constantly increasing the carbohydrate. By remaining on a comparatively low carbohydrate régime for some months, further improvement in tolerance may result. The final state varies greatly. Some patients continue to struggle along on a high fat diet with little carbohydrate, while others, at one time apparently more severe cases, can eventually consume practically ordinary food and even plain bread with impunity.

With ordinary care the patients remain in good health and have no return of their old symptoms. Many are able to take up their former occupations and can undertake even hard work without difficulty. Those on poorer diets become easily fatigued and are only fit for lighter occupations. Great care must be taken to avoid intercurrent diseases, infections being particularly dangerous to those on low diets. Resistance to disease, though low, is better when there is freedom from glycosuria. The margin of safety may not be great and a comparatively mild infection may again upset the carbohydrate metabolism. Worry, excitement, &c., must also be avoided. The modern methods of treatment are of too recent introduction to allow a dogmatic statement as to the expectation of life, but it is believed adequate treatment will enable even severe cases of diabetes to enjoy better health and live longer.

Conclusions.

Before treatment is begun a valuable index of the gravity of the disease is the degree and rapidity of body-wasting that has taken place. For practical purposes the best guide to the severity of the condition is the total amount of glucose lost each day in the urine, but this sign, like nearly all others, fails to distinguish between temporary and permanent damage. Laboratory tests show that in cases of diabetes a degree of hyperglycæmia may still be present even when sugar no longer appears in the urine. Mere estimations of the gravity of the disease when the patient is first seen give no sure guide to the future, since some cases, apparently severe, do much better than others whose signs are less marked. It is therefore recommended that no definite prognosis be given until the character of the patient's response to treatment has been studied.

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A CASE OF
SUBCLAVIAN ANEURYSM WITH CERVICAL RIBS.

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ALTHOUGH the occasional presence of cervical ribs in the human subject was noted by Galen, it was Hunauld who, in 1742, first published a description of such a case. The first operation was performed by Coote in 1861, and only eight were recorded in the 35 years to 1895. Since then a steadily increasing number of cases has been published, and, of late years, an enormous literature has grown up round the subject. Cases of cervical rib come under treatment mainly for symptoms connected with pressure either upon the brachial plexus or the subclavian artery. It is noteworthy that it is especially the smaller ribs which cause trouble with the plexus, and the larger with the artery. Lewis Jones laid it down as an axiom that the brachial plexus is not pressed on if the rib can be plainly palpated in the neck. Apart from the two types of case mentioned, other cases have been described from time to time in which the presence of a cervical rib has been reported as having been accompanied by a subclavian aneurysm. In most of these the evidence was of the flimsiest nature, and the abnormal pulsation above the clavicle was doubtless due to the raising of a normal artery by the cervical rib. In a few cases, which will be referred to later, the evidence of aneurysm was more definite. In the case about to be described the presence of a saccular aneurysm of the subclavian artery was demonstrated beyond doubt.

The patient, a spare man of 55, a house-painter by trade, was unaware of any abnormality until he consulted Dr. John Wallace for a cough. On examining his chest Dr. Wallace noticed a pulsating swelling above the left clavicle and referred the patient to my colleague, Dr. Carey Coombs, who transferred him to me as a case of subclavian aneurysm requiring surgical treatment.

Examination.—There was a general fullness in the lower part of the left posterior triangle, with a small visible prominence the size of a walnut immediately above the clavicle. There was marked pulsation in it which seemed expansile in character. The small swelling could be grasped in the fingers and moved laterally, but was in close relation, or actually adherent to the underlying artery. There was neither bruit nor thrill, and no palpable difference in the radial pulses. Proximal pressure on the artery caused collapse of the swelling. Internal to the swelling, a cervical rib could be easily felt, and another one, less distinctly, on the opposite side. This condition was confirmed by X ray examination, the plate showing a well-marked cervical rib on either side, the right one having a free bulbous extremity, and the left one being joined at its distal end to the first dorsal rib.

The diagnosis of cervical rib being thus clearly established, it remained to decide whether there was an aneurysm, and whether, in the absence of symptoms, any treatment was required. While the patient was under observation a perceptible increase in the size of the small swelling took place, and—probably as a result of suggestion from the interest his case aroused—he began to complain of pain down the inner side of the upper arm.

Various opinions were expressed by those who saw the case. Some thought no treatment was required, some that it was an enlarged gland overlying the artery, some that it was an aneurysm and that operation was strongly indicated. With the latter opinion I agreed. The swelling was increasing, and the pulsation felt expansile and not merely transmitted; the Wassermann reaction was triple positive.

Operation.—A horizontal incision was made along the clavicle after drawing down the skin, and the swelling readily exposed. It turned out to be a saccular diverticulum of the size of a cherry, springing from the front of the third part of the artery—itself apparently normal in other respects. The wall was thin and the sac could be emptied by compressing it. The incision was converted into an angular one by making a second one parallel to the edge of the trapezius. The rib was readily exposed, cleared up to its neck, and well beyond the brachial nerves, and divided there; its distal end was united to the dorsal rib by a joint with cartilage and capsule complete. It was disarticulated and removed. The pleura and some fibres of the scalene muscle were attached to it. Nothing was seen of the suprascapular artery and nerve, or of the subclavian vein. The transverse cervical artery was easily identified and avoided.

Attention was next turned to the aneurysm. Aneurysmorrhaphy suggested itself as the ideal mode of treatment, but it would have been impossible to apply a distal clamp without dividing the clavicle. On the other hand, the coats of the artery looked quite healthy on either side; there was no matting to surrounding parts and there seemed no reason to anticipate trouble in the arm from tying the artery. A kangaroo-tendon ligature was therefore placed on either side of the sac. The operation was straightforward throughout and almost bloodless.

Next day the arm was normal, except for absence of the radial pulse. The circulation differed in no other respect from that of the opposite side and all movements were unimpaired. There was a little surgical emphysema of the right chest and face, but none of the left side, and no clinical signs of pneumothorax. Recovery was uneventful. The radial pulse began to reappear on the fourth day, and the aneurysm could be felt, but no longer seen, as a firm non-pulsating mass. The piece of rib removed was 2¾ inches long and showed a well-marked neurovascular groove at its distal end.

Remarks.

Here, then, was an undoubted case of subclavian aneurysm with a cervical rib. As to the causal connexion between the two conditions, it is worth remarking that the aneurysm sprang from the front of the artery and not from the part in contact with the rib. The presence of a normal radial pulse seemed to indicate that there was no compression of the artery. In this connexion, Halsted's[1] experiments on the partial obstruction of arteries with aluminium bands are noteworthy. A prolonged search of the literature has revealed no case quite parallel with the above. Some cases, loosely called aneurysm in the early days, were normal arteries pushed up by the rib. Others revealed themselves as expanded arteries, which returned to normal calibre as soon as the rib was removed, as in Tubby's[2] case, where the operator actually saw this occur before he closed the wound. In Murphy's[3] case the sketch shows a well-developed aneurysm, but the author has stated that the artery was merely flattened and spread out, the appearance of it being much exaggerated by the artist. Keen[4] had a case in which the calibre of the artery, beyond the edge of the scalene muscle, was twice its normal size. He doubted if any of the recorded cases were genuine aneurysms and remarked, "In no case has the vessel been ligated; a very wise abstinence." In Ehrich's[5] case the aneurysm developed after the removal of the rib, which he attributed to the effect on the arterial wall of the loss of support. Perhaps the most convincing case is that of Adams.[6] The patient came under treatment in 1836 for some eye trouble and was noticed to have a pulsating swelling above the left clavicle, and a hard swelling to its inner side. A diagnosis of aneurysm with cervical rib was made, and many consultations held as to the advisability of operation. Three years later the patient died of pneumonia and a fusiform aneurysm 3 inches long was found, starting beyond the edge of the scalenus anticus. There was a double cervical rib and no visible disease of the arterial wall.

It will be noted that in every case the dilatation was distal to the rib, so obstruction to the circulation apparently played no part in the causation. In my case the wall of the sac was thin and the swelling increasing in size; to all appearance rupture of the sac at no distant date must have occurred. On the general question of the necessity for operation in cases of cervical rib, it is noteworthy that, so far as published cases go, the mortality of operation is nil. On the other hand, cases have been described by Sherren[7] and others where the operation caused trouble from nerve involvement in the scar, and by Thorburn[8] where a troublesome sinus, not due to sepsis, formed some time afterwards and remained in one case as long as 18 months. To anyone in search of information on any subject connected with cervical ribs, the exhaustive bibliography collected by Honeij[9] may be recommended.

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BLOOD-SUPPLY OF THE DENTATE NUCLEUS OF THE CEREBELLUM.

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IT is surprising how little is known about the arrangement of the blood-vessels of the cerebellum. The summary accounts of the arteries found in the text-books represent all that is known. It seemed worth while to investigate this subject more fully, not merely to get the morphological information itself, but also in the hope of throwing some light on the functions of the cerebellar and the clinical manifestations of lesions affecting it.

With this object in view a number of brains were injected by the method described by Beevor[1] (1909). The cerebellar cortex is supplied by three vessels, the posterior inferior cerebellar, the anterior inferior cerebellar, and the superior cerebellar arteries. The freedom of anastomoses between these vessels on the surface of the organ renders it a difficult task exactly to delimit the areas of their cortical distribution. In this note no attempt is made to deal with this aspect of the problem. Attention will be concentrated on the blood-supply of the dentate nucleus. The posterior inferior cerebellar artery has been described by Stopford[2] (1916) and I can verify his account of its course and relations and also of the variability of its origin. He has given a comprehensive account of the blood-supply of the pons and medulla oblongata, but did not include the cerebellum in his investigation.

It will be seen from the figure here reproduced that the blood-supply of the dentate nucleus comes from the posterior inferior cerebellar artery as this vessel is lying between the medulla oblongata and the hemisphere of the cerebellum. It passes upwards between the tonsil and the lobus biventer, enters the medullary substance to reach the dentate nucleus, where it breaks up into numerous terminal branches. It is an end-artery.

References to cases of thrombosis of the posterior inferior cerebellar artery (up to 1916) will be found in Stopford's paper. Since its publication Winkler[3] (1918) has described a case of thrombosis of this vessel with a further bibliography. Whilst agreeing with Stopford that the cases recorded show a certain degree of variability, for which the vessel itself is partly responsible but partly also whether the vertebral or basilar are involved at the same time, nevertheless the symptoms are sufficiently constant in the majority of cases of thrombosis to warrant the conception of a posterior inferior cerebellar syndrome. In this syndrome we find a dissociated anæsthesia, there being, as a rule, loss of appreciation of pain and tempera-

ture in the face on the side of the lesion (due to the involvement of the descending root of the trigeminus), loss of pain and temperature appreciation on the opposite side of the body (due to involvement of the tractus spinothalamicus) and dysphagia (due to involvement of the nucleus ambiguus), and among other symptoms we find ataxia on the side of the lesion and analogous cerebellar lesions.

Hun[4] describes a case in which the nucleus dentatus is depicted with a number of very small foci of softening. In the interpretation of the cerebellar symptoms due regard has not been paid to the lesions of the dentate nucleus. In fact, Hun is the only writer, so

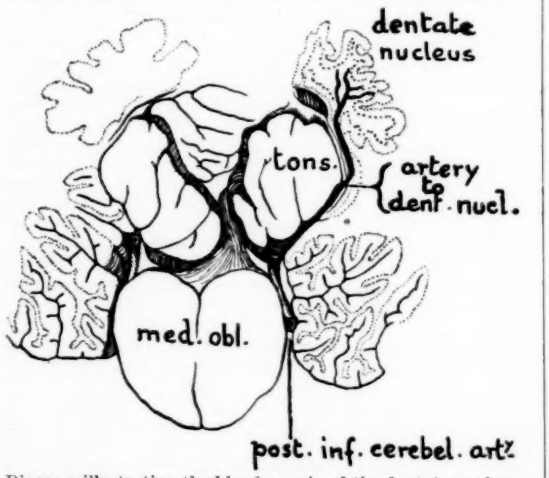

Diagram illustrating the blood-supply of the dentate nucleus.

far as I am aware, who has noted the lesion. He states (p. 614): "There is nothing in the clinical history which enables us to assign any date to the focus of softening in the cerebellum, but, inasmuch as it lies quite close to the focus of softening in the medulla, it is not improbable that both regions are supplied by the same arterial trunk, the posterior inferior cerebellar artery." It is apparent that some of the symptoms are due to the damage to the dentate nucleus and the resulting degeneration of the superior cerebellar peduncle and other tracts passing from the dentate nucleus. It must be borne in mind, however, that the free cortical anastomosis may permit the dentate nucleus to escape in some cases of thrombosis of the posterior inferior cerebellar artery. This affords an explanation of the variability of the cerebellar symptoms in these cases. The fact of the artery to the dentate nucleus being an end-artery opens up the possibility that many of the cases of localised lesions of the dentate nucleus are of vascular origin. Buzzard [5] and Spiller [6] have described similar cases. The middle cerebellar peduncle receives its blood-supply from the basilar artery, and the superior peduncle from the superior cerebellar artery.

The explanation of certain cerebellar lesions may be facilitated by these anatomical facts, but the author leaves such interpretations to the clinicians and physiologists.

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PRESENTATION TO A MEDICAL MAN.—Dr. F. W. Apthorp has been presented on his retirement with a cheque for £172 1s. 7*d.*, a silver cigarette case, and an album containing the names of over 600 subscribers, as a token of appreciation of a professional career in the Burgess Hill district of Sussex extending over a period of 30 years.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

"FOCAL TENDERNESS" IN THE DIAGNOSIS OF GASTRIC ULCER.

BY GEO. VILVANDRÉ. M.R.C.S., L.R.C.P. LOND.

By palpating with one finger along the whole of the small curvature, from a point nearly as high as the cardia, starting from the infra-chondral margin down as far as the pylorus, a test is applied in the X ray diagnosis of gastric ulcer which, in my experience, is of great value. In a certain proportion of penetrating gastric ulcers any other evidence but the visibility of the ulcer is not needed, the size of the crater being sufficient to cast a shadow on the screen or film that defies any other interpretation but that of penetrating ulcer. It is sometimes accompanied by a gas bubble above the barium shadow and sometimes also by a sinus leading from the mucosa to the depth of the ulcer which may even reach the pancreas. But in the more difficult cases, none the less numerous, which one encounters among hundreds of patients, the finger test of what I like to call "focal tenderness" is to me of great value.

The less developed or less chronic gastric ulcer may show as only a pin-point, or of a size reaching that of a small pea, and the smaller the shadow the less the certainty of its diagnosis on the screen or film. Especially is this so in the region of the fundus where the jejunum crosses posteriorly the body of the stomach. The relationship of the fundus and first portion of the jejunum just beyond the duodeno-jejunal flexure is not constant, owing to the variability of the stomach level and size in different individuals and the length of the mesentery of the jejunum. These points count much in accurate diagnosis, and often one is puzzled for a while as to whether the small shadow seen at that level is a variable amount of barium "hanging" in the jejunum, or the visible evidence of a small penetrating ulcer. The difficulty is real to one who examines many gastric cases. In such dilemma I have often found that pressure with the tip of the index finger has elicited definite pain and calling out on the part of the patient in response to the stimulus applied directly over the point where the ulcer is present.

Palpation similarly applied along other points of the small curvature elicits no response. The more intelligent the patient, the more rapid and definite the response. But I have found the chief aid to diagnosis in those cases to occur where a spasm or incisura is present in the outline of the great curvature, especially in the upper portion of the fundus. On tentatively applying finger pressure opposite the spasmodic contraction, a point is often elicited at which "focal tenderness" is definite and sometimes severe. I have made opaque meal examinations on medical men and other intelligent patients and in some of these I have obtained "focal tenderness" definitely and repeatedly at the same spot, and in those cases it coincided with the presence of an ulcer. The facts, I believe, are somewhat opposed to the teaching of neurologists, but I feel certain of the value of the test.

Whereas tenderness over an ulcer is obtained by palpation in the standing position, I have observed that on placing the patient on his back the painful point is not found. This may be due to the fact that the stomach, when filled with heavy barium, is stretched to some extent, whilst in decubitus the posterior portion of the fundus contains most of the meal and the small curvature is placed more posteriorly. What is the cause of this tenderness? It is distinct from distension pain, nor is it the same apparently as that complained of by the patient when, according to the position of the ulcer, he gives the time of the appearance as varying from directly after to one and a half

hours after food. Also a patient often comes up for examination without any pain at the time, but only complains of that given him by palpation. The stimulus here is definite at a given point, repeatedly obtained, rapidly disappearing, sharp. In definitely penetrating ulcers it can be explained by the fact that the peritoneal coat is penetrated and that possibly other organs are involved and directly stimulated by the applied pressure. The pain is more difficult to explain in the probable absence of penetration, except that the musculature of the viscus being already in a state of spasm, more rapidly reacts to stimulus and the spasm is increased. In very chronic lesions it is usually not obtained, and here probably nerve endings are destroyed by the ulceration.

Weymouth-street, W.

THE ASSOCIATION OF FAILURE OF ACCOMMODATION WITH SORE-THROAT.

BY LEWIS MCMILLAN, M.D. GLASG.,
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FAILURE of accommodation due to a paresis of a branch of the third nerve from toxin poisoning is a frequent enough and well-known sequela of diphtheria. Spasm of accommodation produced by muscarin from certain varieties of mushrooms and from ptomaine poisoning is also known. Debility, as from chronic nephritis, causes weakness of accommodation; and diabetes is also stated to cause contraction of the range of accommodation.[1] Albuminuria occurs in some cases of tonsillitis, and Lennox Browne,[2] quoting Haig Brown, differentiates between the albuminuria of tonsillitis, diphtheria, and scarlet fever. If then sore-throat causes albuminuria from septic absorption, may it not also cause failure of accommodation? So far as I know, sore-throat is not recognised as a cause of failure of accommodation, yet the following two cases appear to be of this order:—

CASE 1.—E. H., male, aged 7, seen in January, 1916, complained that he was unable to see fine lines or dots for tracing in his writing copybook, which formerly he had been able to do easily. He was able to read 5/5 Snellen with either eye and No. 6 Jaeger without glasses. His refractive error was a low one and correction for distance did not enable him to see the hair-lines in his copybook. The history given was one of a severe attack of tonsillitis of recent date. Suggestions of the possibility of the trouble being due to diphtheritic paralysis of accommodation were made to his doctor, who replied that although no swab was taken from the boy's throat yet there was no doubt that the disease had been tonsillitis, and severe at that. A rest of some months from school work was followed by cure. Seen again in October, 1919, vision with a weak sphero-cylinder was equal to 5/5 Snellen and No. 2 Jaeger.

CASE 2.—C. C., female, aged 33, was seen in September, 1921, and gave a history of severe sore-throat a month previously, followed about three weeks later by trouble with near vision. Her medical man reported subsequently that a swab taken from the throat was reported by the sanitary authorities as being negative for diphtheria. The distance vision of the left eye was defective owing to hypermetropic astigmatism, but correction brought each eye up to 5/5 Snellen. Without glasses near vision was only equal to No. 12 of Jaeger near types, but with strong plus lenses added to her correction for distance it was brought up to No. 1 Jaeger. There was no diplopia. Her distance correction was ordered, as also a strychnine mixture. When seen a month later she was able to read No. 1 Jaeger with or without her distance correction.

When a patient comes complaining of recent defective vision for near work and with a history of previous sore-throat, we are tempted to say at once, diphtheria! In the absence of a positive culture it is difficult to dogmatise; diagnosis may depend upon the point of view. In the absence of a swab from the throat in the first case, it is, of course, "not proven," but in the second case there can be, I think, little doubt. One or two cases may prove nothing, but they may at least be of use in bringing forward from other sources evidence for or against.

[1] Knies: The Eye in General Diseases, pp. 359, 398, 439.
[2] L. Browne: Diseases of Throat and Nose, fifth ed., pp. 340–1.

Medical Societies.

LONDON ASSOCIATION OF THE FEDERATION OF MEDICAL WOMEN.

A MEETING of this Society was held on May 16th at the Elizabeth Garrett Anderson Hospital, Dr. L. MARTINDALE, the President, being in the chair.

Miss MARGERY FRY, J.P., hon. secretary, Penal Reform League, spoke on

The Medical Aspects of Penology.

She referred to the need that existed for women with special training in psychology to act as prison medical officers, and also for more skilled nursing in many prison hospitals. There was, however, a much wider field for trained medical minds in the whole treatment of criminals than that afforded by the old conception of the prison medical officer as the man or woman who looked after the physical health of prisoners undergoing punishment. Whilst the lawyer was called upon to say, "What has this man done?" the doctor ought to be called upon to say, "What is to be done with this man?" Only when the causes of crime were studied in a really scientific spirit was there any hope that true remedies for crime would be discovered and applied. Already under the Birmingham scheme certain classes of criminals—e.g., those repeating the same offence again and again without apparent motive—were being individually examined with a view to appropriate treatment. Miss Fry pleaded for a wider study from the medical point of view of the problems of criminology, urging that the present treatment in prisons was unscientific and therefore wasteful.

A short paper on the same subject by Dr. MARY GORDON was read in her absence by Dr. CONSTANCE LONG, and a discussion followed, in which Mrs. SCHARLIEB, M.D., Dr. MARY BELL, Dr. MINA DOBBIE, Dr. C. MURRELL, and others took part.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases.

A CLINICAL meeting of this Society was held at the West London Hospital on May 5th, when Sir G. LENTHAL CHEATLE, the President, occupied the chair.

Dr. L. C. BURRELL showed a well-marked case of hypertrophic pulmonary osteo-arthropathy in a young man. The condition had commenced after an attack of influenza six months ago. There was evidence of bronchiectasis at one base. He thought that improvement might follow the operation of artificial pneumothorax.—In reply to Dr. VAUGHAN PENDRED, Dr. Burrell said that no satisfactory explanation had been yet found as to the cause of joint changes and clubbing of fingers in cases of chronic chest diseases. He referred to a case of marked clubbing of the fingers he had seen in which post mortem the clubbing had entirely disappeared.

Mr. O. L. ADDISON showed: (1) A case of epithelioma of the scrotum in an old man who had never worked in soot. The inguinal glands were enlarged on both sides. He proposed excising the growth and the glands and then applying X rays. (2) A case of chronic empyema sinus in a young girl. Repeated operations had been performed with a view to closing the sinus, including the removal of the ribs overlying the cavity drained by the sinus. These had all proved useless. He had therefore freely opened the chest and decorticated the lung over an extensive area. The result had been a complete success.

Mr. D. DENHAM PINNOCK showed: (1) A well-marked case of osteo-chondritis coxæ in a boy. He thought that trauma was probably responsible for the condition.—In a discussion on the case Mr. ADDISON said

that he had seen cases in which radiography had shown marked changes in the head of the femur recover completely by simple splinting of the hip-joint. (2) A boy with marked coxa vara on both sides, due probably to late rickets. Progression had been difficult owing to "scissor-leg" deformity. He had performed subtrochanteric osteotomy on one side. The child now walked well with only a slight limp. X rays were shown illustrating the condition before and after operation.

Dr. J. BURNFORD showed: (1) A case of true polycythæmia in a woman. The Hb index was 138 and the red count 12,000,000. There was no splenic enlargement. (2) A case of recovery from blindness the result of optic neuritis associated with influenza. He discussed the possibility of the condition having been a polioencephalitis. (3) Cases illustrating congenital syphilitic joint affections in children.

Mr. NEIL SINCLAIR showed: (1) A case of ossifying sarcoma of the scapula in a man of 67. The patient's general condition in his opinion would not permit of any extensive operation being performed, and he proposed trying the effect of X rays. (2) A case of actinomycosis of the mandible and cheek in a woman. The condition was responding well to large doses of potassium iodide after removal of several carious teeth.

Mr. B. SANGSTER SIMMONDS exhibited a tumour of the upper end of the femur in a man. X rays showed expansion of the endosteal cavity. Various opinions were expressed on the case, the most favoured diagnoses being endosteal sarcoma and osteitis fibro-cystica.

Mr. RODNEY MAINGOT showed a case in which diaphysectomy of the lower third of the femur had been performed for acute osteo-myelitis. Complete regeneration of bone had taken place and no shortening of the limb had resulted.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

A MEETING of this Society was held in Manchester on May 5th, with Mr. H. CLIFFORD, the President, in the chair.

Dr. ARCHIBALD DONALD read a short paper on

Adenomyoma of the Recto-vaginal Space

associated with cystic ovarian tumours with tarry or chocolate contents. He reported five cases of recto-vaginal adenomyoma on which he had operated within a period of 12 weeks. In three cases panhysterectomy had been performed, in one double salpingo-oöphorectomy with removal of a nodule from the posterior aspect of the cervix, and in the remaining case removal of a hard growth from the anterior wall of the rectum after separation of adhesions. In three of the five cases the ovaries contained cysts with tarry or chocolate-coloured fluid. He believed these cysts were due not merely to an accidental effusion of blood into a cyst, but were really adenomyomata of the ovary because: (1) these cysts were generally firmly adherent, burrowing deeply into tissues; (2) the contents resembled the thick tenacious brown fluid found in hæmatocolpos and hæmatometra and in the gland spaces of adenomyomata; (3) there was always acute dysmenorrhœa during the first two days of menstruation. From material provided by Dr. Donald pathologists had not so far succeeded in finding a slide showing a glandular lining of endometrial type, but pathological support for his theory was now coming quickly. He quoted six cases mentioned by Lockyer and Cullen of ovaries which contained islands of uterine tissue, and referred to a communication by Sampson to the *American Journal of Obstetrics and Gynæcology* of November, 1921, entitled Perforating Hæmorrhagic Cysts of the Ovary. Sampson believed that these cysts are hæmatomata of endometrial type and that the material escaping from the cysts may give rise to widespread adenomyomata.

Dr. J. W. BURNS read a paper on

Chronic Endocervicitis and its Treatment.

He had made a close study of the bacteriology, pathology, and treatment of this condition in 84 cases and had reached the following conclusions: 1. Chronic endocervicitis should be recognised as a distinct pathological entity apart from endometritis. 2. Any discharge from the vagina which induces discomfort in the patient is pathological and usually due to chronic infection of the cervical canal. 3. That the condition is an infective one is proved by the fact that a positive culture can be obtained in 92 per cent. of cases. In 50 per cent. the staphylococcus either alone, or in association with some other organism, is present. 4. Applications of various drugs, douching, tamponage, &c., only give temporary relief because the antiseptics do not reach the infecting agent in the lumen of the glands. 5. Ionisation brings about a marked improvement in those cases where no erosion is present. 6. For those cases associated with erosion, the only successful method of treatment is the removal of the lower two-thirds of the cervical canal including the erosion.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases and Specimens.

A MEETING of this Society was held on May 10th, Mr. C. H. WALKER presiding.

Dr. J. A. NIXON demonstrated cutaneous reactions to proteins and other foreign substances, using various grasses, dog's hair, cheese, &c., as examples.—Mr. T. CARWARDINE demonstrated a case of tubular graft (cartilaginous rib wrapped in pectoral skin) for the repair of a traumatic defect of the nose.—Dr. ELLIOTT T. GLENNY demonstrated a case of diaphragmatic hernia, probably traumatic, with the whole of the stomach in the thorax.—Dr. W. KENNETH WILLS demonstrated (1) a case of alopecia areata treated by a vaccine (a diphtheroid organism) from tonsils; (2) scleroderma of forearm, with white-spot extension; (3) lupus vulgaris developing round keloid, treated with X rays; (4) verrucous tuberculide; (5) scrofulodermia.—Mr. A. J. WRIGHT showed a patient with a swelling of the tonsil, probably due to an abnormally long styloid process.—Dr. H. J. DREW SMYTHE demonstrated a case of osteitis deformans in a woman 53 years of age.—Mr. C. A. MOORE showed (1) a man with a left subclavian aneurysm, coinciding with a cervical rib (ligature of subclavian artery had been followed by solidification of the aneurysm); (2) a man with a dermoid tumour of the abdominal wall which disappeared after incision.—Dr. RICHARD CLARKE showed (1) a man with lymphatic leukæmia; (2) a small veal bone, removed from a patient's bronchus by Mr. Harty; (3) specimens of congenital heart deformities.—Mr. J. P. HARTY showed a patient who had been treated by open operation for a bilateral frontal sinusitis of influenzal origin, and acute course, with a successful result.—Mr. R. G. P. LANSDOWN showed (1) a man with a large epithelioma of the mammilla, which he proposed to excise; (2) two cases of epithelioma of the tongue, successfully treated by diathermy.—Mr. W. S. V. STOCK showed a new form of air-way for use in intranasal operations.

DEATH OF A FAMOUS BENEFACTOR.—A few days after the public announcement relating to the St. Monica's Home of Rest, Bristol, which is being built and endowed for middle-class patients suffering from incurable disease out of funds provided by Mr. H. H. Wills, the death of the benefactor occurred. Mr. Wills's generosity was famous throughout the West of England. His gifts to the University of Bristol, amounting to about £500,000; his gift of £100,000 to the Bristol Royal Infirmary, of which he was chairman until ill-health compelled him to resign, and his present of a convalescent home to Clifton College, are recent benefactions which may be fitly recalled, but it was not in big gifts alone that Mr. Wills showed his interest in the treatment of disease. The movement towards coöperation between the two hospitals of Bristol owes much to the initiative and energy of Mr. Wills, who was convinced that it was essential to progress in institutional treatment in Bristol.

Reviews and Notices of Books.

GENERAL PSYCHOLOGY IN TERMS OF BEHAVIOUR.

By STEVENSON SMITH, Ph.D., Professor of Psychology in the University of Washington; and EDWIN R. GUTHRIE, Ph.D., Assistant Professor of Psychology in the University. London and New York: D. Appleton and Co. 1921. Pp. 270. 12*s.* 6*d.*

PSYCHOLOGISTS ordinarily find it necessary to talk in terms of mind, consciousness, and even of the unconscious, though they admit these are only conceptions to facilitate the description and discussion of phenomena. A psychology without a psyche can be justified if it succeeds, and in their opening paragraph our authors lay down the standard by which they are to be judged. They announce boldly that "psychology takes the common-sense view that any animal is a physical object in a world of physical objects. It assumes that all these objects act upon each other in the ways described by physics, chemistry, and physiology. It considers man's behaviour as a physical event that can be analysed into bodily movements. In this sense man's behaviour is mechanical and his body a machine."

In this book behaviour is analysed in terms of stimulus-response mechanisms; instincts, for example, are chain reflexes, and Pavlov's conditioned reflex becomes the type of all reactions that depend upon previous experience. We read (p. 211) of the hypothesis that each stimulus-response mechanism has its store of nervous energy, that certain mechanisms resulting in acts of love, fear, and other emotional expressions are supplied with a great amount of latent energy, and that "from these reservoirs many less energised mechanisms receive their additional drive." "Drive" now becomes of importance, but although it is introduced as "nervous," whatever that means, it is as speculative as "vital force" or "animal spirit," and as little capable as are those terms of description by physics, chemistry, and physiology. On p. 215 we find that children have "coenotropic tendencies" to inflict pain, to seek painful stimuli, and to exhibit their bodies and observe the bodies of others, and "all these tendencies are undoubtedly a part of sex behaviour." After a pause for wonder how behaviourists have removed all doubt from a very disputed proposition, we read that a derivative form of the tendency to cause pain is seen in bullying other children and compelling their submission; we are told next that "these acts borrow the drive of the behaviour from which they originate." Seeking an origin of the "behaviour" we find (p. 137) that coenotropes are "common modes of learned [*Anglice* learnt] response that are the product of original nature and commonly shared environment." Apparently, the sex behaviour of the child is the product of original nature and environment, and to postulate these as a source of "drive" is not the method of the physicist, the chemist, or the physiologist. A more flagrant assumption of knowledge is found on p. 256: "The train of thought takes one direction at one time and another direction at another time, because of the varying resistance at synapses." If we admit as fact such facile speculations we are in the intellectual position of primitive man who, rather than confess his ignorance, found any explanation better than none. Sometimes the authors' method is to look a difficulty boldly in the face and pass on: "When a conflict arouses an unusual amount of unliberated drive, a form of behaviour known as *hysteria* may result. . . . . It should be borne in mind that the hysterical act or symptom is beyond the patient's control" (p. 216). What control is, and why the act is beyond control, are obvious difficulties that the behaviourist avoids.

There is an appendix in which such matters as consciousness, memory images, and imagination are considered, after the warning that such terms are useless in a description of behaviour (p. 244). Why the appendix is inserted is not clear, unless it is to indicate that, after all, behaviourist psychology is only an intellectual exercise—a feat like swimming with arms tied. In any case this attempt to resuscitate Cartesian philosophy has not succeeded.

TUBERCULOSIS.

Les Bases Actuelles du Problème de la Tuberculose. By F. BEZANÇON, Professeur à la Faculté de Médecine, Membre de la Commission Permanente de la Tuberculose. Paris: Gauthier-Villars. 1922. Pp 196. Fr.7.

THE task of condensing into a scientific primer the principles of tuberculosis is far from easy, for the principles of to-day are the shibboleths of to-morrow, and the extravagant guesses of yesterday are the dull platitudes of the moment. On the whole Prof. Bezançon in his book on the fundamentals of tuberculosis steers a wise and moderate course, and there are many features of this work which will prove attractive even to specialists. On such a subject as conjugal tuberculosis, for example, the author ably distinguishes between the problem as it affects the well-to-do, and as it appears to the working classes. Mass infection is to a certain extent a matter of money, and the consort of a tuberculous patient living in squalor, working for two, and eating for less than one, must necessarily be running greater risks of infection than the consort with independent means. The author discusses under such headings as specific treatment, chemotherapy, artificial pneumothorax, the modern armamentarium against tuberculosis, and he emphasises the importance of sociological and hygienic reforms which, if carried out, should go far towards making chemotherapy and other systems of treatment superfluous.

La Tuberculose Pulmonaire. Etudes de Phtisiologie Clinique et Sociale. By LÉON BERNARD, Professeur à la Faculté de Médecine de Paris. Paris: Masson et Cie. 1921. Pp. 258. Fr.10.

Prof. Bernard's book on pulmonary tuberculosis is a decoction of his lectures, given before and after the war, at the Laennec Hospital and the Faculty of Medicine. We have used the word "decoction" advisedly and in an appreciative sense; the spoken and the written word have different functions, and the lecturer who publishes verbatim the best of lectures is not likely to produce the best of books. Our only quarrel with this book is the absence of an index, and this omission is largely compensated for by the excellent summary with which the author winds up each chapter. The first is concerned with the fundamental characteristics of tuberculosis, and the modern teaching that pulmonary tuberculosis is the final stage of an infection dating back to childhood and even infancy in many cases. Of the immunity acquired by the first infection, the author writes with the diffidence of one whose knowledge of a variable, unstable, and capricious state is admittedly incomplete. In the second chapter, on the chronic forms of pulmonary tuberculosis, the author discusses briefly that interesting possibility that asthma may be an atypical manifestation of the activities of the tubercle bacillus.

One of the most helpful chapters is devoted to prognosis. A generation ago a learned physician, famous for his aphorisms, confessed that the only thing certain about his prognoses was that, applied to cases of consumption, they would be sure to be wrong. Prof. Bernard makes no claim to infallibility and prophetic omniscience, but with the help of numerous modern tests, notably the cuti-reaction in the adult and the blood pressure, he finds it rare that his prognosis is belied by events. It is curious that in Anglo-Saxon text-books on pulmonary tuberculosis these two aids to prognosis are barely mentioned, much less given the prominence which the author finds they deserve. In the section on treatment, a whole chapter is devoted to artificial pneumothorax, of which the author speaks in high terms. Of accidents, such as gas embolism, he has seen nothing

and he is inclined to consider both this danger and that of pleural reflex overrated. He adds a warning in connexion with the too early discontinuance of this treatment; two years' continuous treatment are in his opinion the irreducible minimum. Prof. Bernard's opinion of the specific treatment of pulmonary tuberculosis is indicated in the heading to the short chapter on this subject. "Medication, Called Specific," is a title that by implication conveys the maximum of unbelief in the minimum of space.

The last part, amounting to almost half of the whole book, is devoted to the sociological aspect of the disease, and the value of notification and other measures is discussed in a broad and tolerant spirit.

DIABETES.

Diabetes: Its Causation and Treatment. Second edition. By ERNEST E. WATERS, M.D. Edin., M.R.C.P. Lond., Lieut.-Colonel, I.M.S., Superintendent, Presidency General Hospital. Calcutta: Thacker, Spink and Co. 1922. Pp. 276. 10*s*.

THIS book embodies the work of Colonel Waters on the type of diabetes which occurs among the natives of India. It gives a fair account of the physiology of carbohydrate metabolism and of the various ways in which it can be modified by the different ductless glands. The treatment recommended is that worked out by Allen, modified according to the needs of the patients in India. The diet-tables are good. A series of illustrative cases is described at some length together with the exact dietary details. Certain errors may be noted. The author rightly insists on the importance of knowing the exact amount of sugar excreted, but he gives the amount in grains instead of grammes, although he often speaks of the sugar in the food in terms of grammes. In recommending the use of Benedict's solution for testing for sugar he gives the old formula instead of the one in current use. Several tests for the acetone bodies are given, but the most delicate and conclusive, Rothera's nitro-prusside test, is not mentioned. A test for β-oxybutyric acid, which is of doubtful value, is given; but it is hardly necessary to test for this substance separately, since it is always present when the nitro-prusside test is strongly positive and never when this test is negative. Colonel Waters says that no patient who passes sugar at a life-insurance examination should be accepted. This advice is contrary to the principle governing all recent work on renal glycosuria. A better rule is that no patient who passes sugar should be accepted unless he has been subjected to proper tests and the type of glycosuria ascertained. The book is well got up, has a good index, and should be of use to medical practitioners who want a concise and readable manual.

Le Diabète Sucré. By Dr. F. RATHERY, Professeur Agrégé à la Faculté de Médecine de Paris, Médecin de l'Hôpital Tenon. Bibliothèque des Connaissances Médicales, dirigée par le Docteur APERT. Paris: Ernest Flammarion. 1922. Pp. 294. Fr.7.50.

THIS is one of a new series of books published on special subjects, the idea of the series being to make the recent knowledge accessible to medical practitioners by presenting it in a simple form. This book hardly fulfils this object. Dr. Rathery starts with a short historical survey of the subject, and then proceeds to deal with the metabolism of carbohydrates. A good account of the physiology and pathology of the disease is given, the clinical details are set out fully, and the complications are described at length. These sections occupy 273 pages, while the important details of treatment are compressed into 12 pages. The treatment is on old-fashioned lines. The modern fasting methods are mentioned but are described as being no better than the methods of Bouchardat for simple cases, while causing only a transitory improvement in severe ones. These results are very different from those obtained in America or England.

The book badly needs an index and where so many names of workers are mentioned a list of references is almost indispensable.

NUTRITION AND GROWTH IN CHILDREN.

By WILLIAM R. P. EMERSON, A.B., M.D., Professor of Pædiatrics, Tufts College Medical School, Boston; President, Nutrition Clinics for Delicate Children, Inc. London and New York: D. Appleton and Co. 1922. Pp. 341. 10*s*. 6*d*.

FOURTEEN years ago the author of this book made the experiment of starting a nutrition class of 12 under-nourished children at the Children's Out Clinic at Boston. These children, with their parents, attended weekly for instruction and observation. The experiment was sufficiently encouraging to merit extension, and in this book the author gives the results of his long experience in the organisation of nutrition clinics on a large scale. That the results of his work will be of direct benefit to others cannot be questioned. As he says in his preface, theories of malnutrition have too frequently emanated from men working behind desks rather than from those in direct contact with children needing help. The physician has been almost as ready as the layman to accept ideas put forward without foundation or justification, and the cousequence is that the malnourished child is not considered sick as long as he is able to be on his feet. Very careful study of the child's habits is needed in order to trace the cause of some defective states of nutrition. The first part of the work, on the diagnosis of malnutrition, deals with weight and height standards, case-histories, physical growth, mental and social examination, in plain readable English. Part II., on Malnutrition and the Home, may be strongly recommended to all parents as a common-sense account of ideal home-life conditions for children, while Part III., on the Nutrition Programme for the Community, may be equally read by parents and child-welfare workers. To the latter in particular we can recommend the volume as a sound text-book.

HEREDITY.

Third edition. Revised by the late L. DONCASTER, Sc.D., F.R.S., Fellow of King's College, Cambridge; Derby Professor of Zoology, University of Liverpool. Cambridge University Press. 1921. Pp. 163. 4*s*.

THIS little book has not been altered in size or general arrangement in the third edition. The earlier chapters deal with the principles of variation, its kinds and causes, and with heredity viewed from statistical and Mendelian aspects. The Mendelian theory is explained in a clear and readable way, with numerous illustrative examples from the fields of botany and zoology. The last three chapters on disputed questions, problems in human heredity, and the association of heredity and sex will be of particular interest to medical men. Their perusal leads one to the conviction that while the subject of heredity in its simplest form may be approached with some confidence, the more advanced problems are almost beyond the present powers of man to solve, though from a practical point of view they are much in need of solution. The death of the author unfortunately prevented the completion of the book according to his original intention, but the syndics of the Cambridge University Press did well to proceed with the production of a new edition of a book adapted in size and price, no less than in contents, to the requirements of the thinking public.

ABDOMINAL PAIN.

By Prof. Dr. NORBERT ORTNER, Chief of the Second Medical Clinic at the University of Vienna. Authorised translation by WILLIAM BRAMS, M.D., and Dr. ALFRED P. LUGER. New York: Rebman Company. 1922. Pp. 362. 8*s*.

IN this book abdominal pain is considered as the differential guide-post to various diseases, for the most part having their pathological source within the abdomen, and the author exhibits knowledge, observation and clinical acumen. Given a patient with any kind of pain in any part of the

abdomen it should be possible, after a study of the particular section of this book dealing with that variety of pain, to arrive at a provisional diagnosis of its source. Whether the pain be a "colicky epigastralgia" or a "chronic continuous hypochondrialgia dextra in the gall-bladder region," the differential diagnosis is carefully discussed. The author has succeeded in writing a very useful book on abdominal diagnosis, but it is not always possible to characterise or localise exactly an abdominal pain, and where this can be done a complete list of possible causes may well confuse the investigator. Dr. Ortner mentions every conceivable cause which his extensive experience can furnish as source of origin for each variety of pain. The result is that the common causes, though usually given first place, are not sufficiently prominent. It helps very little in diagnosis to be given a list of 13 possible causes for "hunger-pain." Some slips have crept in. For example, on p. 157 we find "colongitis" for "cholangitis," and in many places the word "malæna" offends the eye. The book is, however, nicely printed and the translators have done their work well.

JOURNALS.

JOURNAL OF LARYNGOLOGY AND OTOLOGY. March and April, 1922. Vol. XXXVII., Nos. 3 and 4.—The March number opens with a short article by Dr. R. McKinney, of Tennessee, on Some Problems which may Present Themselves to the Occasional Bronchoœsophagoscopist. He insists on the danger of a too protracted endeavour to remove bronchial foreign bodies, considers that it is dangerous to exceed 30 minutes, and believes that two or three short séances are safer and more successful. He prefers distal illumination except for œsophageal cases in the adult, and works for the most part without a general anæsthetic, citing cases to illustrate the danger of asphyxia when an anæsthetic is given to remove foreign bodies in the trachea or bronchi. He also urges the prompt performance of tracheotomy if dyspnœa is present, whether before or after the bronchoscopy.—A long investigation by Dr. A. Logan Turner and the late Major W. G. Porter, continued in the April number, into the Structural Type of the Mastoid Process, is based upon the skiagraphic examination of 1000 crania of various races of mankind. Some interesting conclusions are reached. The mastoid process is found to be cellular in 79 per cent. among Europeans, and in 88 per cent. among other races. In 8 per cent. of skulls one mastoid was cellular and the other not, the left mastoid being usually the cellular one. The relative frequency of the two types and the incidence of asymmetry are the same in the two sexes. The percentage of cellular mastoids is lowest in dolichocephalic and highest in brachycephalic skulls; in this latter type, also, the frontal sinuses are less often absent.—Drs. F. G. Wrigley and G. E. Archer report on 200 Cases of Tonsils and Adenoids treated by operation at the Manchester Ear Hospital. The tonsils were enucleated with a blunt guillotine and the adenoids removed with a curette; no case was retained on account of hæmorrhage, and no case of hæmorrhage was reported; adenoids recurred in one case and necessitated a second operation; in two other cases there was very slight recurrence. Eleven cases showed slight scarring of the pillars which caused no symptoms; two showed a scar and slight angular deformity at the junction of the anterior pillar and soft palate which produced no symptoms.—Mr. J. S. Fraser concludes his study of the Pathological and Clinical Aspects of Deaf-Mutism, with the statistical results of the examination of 135 deaf-mutes; of these 60 were apparently acquired or inflammatory in origin, and 75 probably congenital, one of these being an example of cretinic deafness. Mr. Fraser also describes a case of a bead in the left bronchus of a child of 5, removed by lower bronchoscopy after tracheotomy, after attempts to remove it by per-oral bronchoscopy had failed.—Dr. A. Cubley gives a description of a new tracheotomy tube and false-membrane forceps which have some advantages over other patterns.

In addition to the conclusion of Logan Turner and Porter's investigation of the mastoid process, the April number contains an account by Dr. Neil Maclay of several cases of rhinorrhœa and nasal obstruction produced by anaphylactic sensitivity to various proteins.—Dr. Albert Gray gives a short account of an investigation into the course of Arnold's nerve, which differs considerably from that accepted by the standard anatomical text-books.—Mr. E. D. D. Davis makes some observations on the early diagnosis of otitic meningitis; he concludes that, in a case of acute virulent streptococcal suppuration of the middle ear and mastoid with symptoms of labyrinthine irritation, a lumbar puncture should first be performed, the drum incised, and a simple mastoid operation done; if symptoms do not subside in 48 hours, and the cerebro-spinal fluid shows a leucocytosis, the radical mastoid operation with labyrinthotomy through the promontory and a second lumbar puncture should be performed; failing improvement, and if signs of meningitis develop, then the posterior fossa is to be drained through the internal auditory meatus and by removal of the bone internal to the lateral sinus.—Dr. J. Harrison reports a case of malignant disease, probably endothelioma, of the nasopharynx, in which the primary growth disappeared after exposure to radiu m but who died with numerous secondary deposits.

JOURNAL OF BIOLOGICAL CHEMISTRY.—Vol. XLIX.. contains the following among many papers of interest: Chinese Edible Birds' Nests: (1) Composition and Nature of their Proteins; (2) Isolation and Nature of the Amino Sugar, by C. C. Wang. (1) The Chinese edible birds' nest has the properties of a protein as well as those of a carbohydrate. Its percentage composition resembles that of salivary mucin. Its ash is high, but there is no sandy material present; it contains 10·29 per cent. nitrogen and at least 17·36 per cent. carbohydrate. Artificial digestion experiments indicated that it is digested by both pepsin hydrochloric acid and trypsin at a slower rate than boiled egg. The distribution of nitrogen shows a higher value for both humin nitrogen and cystine nitrogen than for pure proteins. The former is probably due to the carbohydrate radicle in the nest, while the latter is due to the presence of fine feathers. Feeding experiments indicate that the nest protein is probably of an inferior quality. (2) Three sets of pure white crystals having the percentage composition of a hexosamine were obtained. They were of similar properties except in the case of optical rotation, two of them decreased on standing over night and the third increased, the probable explanation being that they represented the α or β forms of hexosamines or mixtures of both.—Studies on Experimental Rickets: IX., Lesions in the Bones of Rats Suffering from Experimental Beri-beri, by P. G. Shipley, E. V. McCollum, and N. Simmonds. Rats fed on a diet complete except for the absence of the anti-beri-beri factor, develop lesions in the bones which are essentially identical with those seen in guinea-pigs suffering from acute and uncomplicated scurvy. Rats confined to the same diet supplemented with water-soluble B do not show these changes. The bones of rats on a diet which is only deficient in fat-soluble A are osteoporotic but have no other resemblance to the bones of scorbutic animals.—The Basal Metabolism of Underweight Children, by K. Blunt, A. Nelson, and H. C. Oleson. Metabolism determinations made on 28 children showed that the basal metabolism of underweight children tends to be higher (up to 40 per cent.) than that of the normal child. No close relation was observed between the percentage underweight and the excess metabolism.—Observations on Blood Fat in Diabetes, by N. R. Blatherwick. The study of the blood fat in relation to the fat in the diet shows that cases of mild and moderate diabetes are apparently able to utilise satisfactorily large amounts of fat, as indicated by constancy of the blood-fat level and by the absence of acetone bodies in the urine.

THE LANCET.

LONDON: SATURDAY, MAY 27, 1922.

The Status of the Insurance Medical Service.

SIX months ago the accredited representatives of medical practice under the Insurance Acts accepted, on grounds of citizenship, the lowering by 1*s.* 6*d.* of the capitation fee, and took their share with a good grace in the substantial reduction of income implied thereby. The question then at issue was not one of principle but of submission to the need for economy manifest in all branches of the public service, and the attitude of panel doctors in the face of this need has had a happy effect in raising the esteem in which panel practice is held by all those who are acquainted with the onerous conditions under which it is performed. The question before the conference which met last week, and which is briefly reported on p. 1059, was of quite another character. Under the provisions of the National Health Insurance Bill now before the House of Commons, part of the cost of medical benefit is to fall for a period of 18 months upon certain funds which have for various reasons accumulated in the hands of the approved societies, and these societies have made it clear that in return for accepting this allocation of their funds they intend to claim a voice in the negotiations in regard to the conditions of medical service after the expiry of the present agreement at the end of 1923. Sir ARTHUR ROBINSON, Secretary to the Ministry of Health, in communicating to the medical profession the Government's decision to adopt this allocation of surplus funds in lieu of the exchequer grant, stated that the Ministry found it difficult to contest this claim of the approved societies. But the panel conference, after mature deliberation, decided without dissenting voice that the admission of any such claim involved a question of principle—namely, a break with the established practice prevailing since the first Act was placed on the Statute Book, that insurance practitioners should negotiate their terms of service directly with the Government and without the intervention of any third party. On this principle, the medical service, it appears, is definitely prepared to stand or fall, and for the good and sufficient reason that in surrendering the right of direct negotiation it would be giving up that which has made the service so far tolerable in the past and hopeful for the future. Surrender would mean a return to a system which had proved intolerable in actual practice, and from which there was little hope of betterment.

The decision, though uncompromising, was not reached out of any feeling of hostility towards the executive officers of the approved societies. On the contrary, the conference was as definite in its intention to coöperate with all those interested in the development of a first-rate medical service as in its refusal to accept third-party intervention. The Insurance Acts Committee was charged with the task of arranging for this purpose a conference with representatives of approved societies, of insurance committees, and of other interested bodies—in fact, with all that large body of social workers, as Dr. H. B. BRACKENBURY put it, who are anxious to contribute in their own sphere to the solution of a great social problem. Such coöperation is no mere pious hope, it is already an accomplished fact in the work of insurance committees in many parts of the country, and there are areas in which it seems to be the natural thing for the same person to preside over both insurance committee and panel committee. Friendly coöperation is one thing, and the right to intervene in private affairs another. And the claim to intervention based upon the allocation of certain funds appears to be nothing short of a *non sequitur*. The Government auditor has already pointed out how the societies who administer sickness benefit have come into possession of large surplus funds. Some of them may be due to the carping and niggling spirit in which certain society officials have administered their benefits. But while this spirit has helped to convince the insured person that the approved society does not "represent" his interests, it would be unfair to attribute the major part of the surplus to such sporadic small-mindedness. The surplus funds are largely due to the war-time conditions, which withdrew from benefit a large part of the nation's manhood, conditions which naturally could not have been foreseen by those who framed the Acts of 1911 and 1913. Probably no one quite foresaw the amazing ability of multiple tiny contributions to develop into large surpluses. But how and when produced, it is difficult to take seriously the claim made on behalf of approved societies to any inherent right of possession of these monies. They belong in certain well-known proportions to the employer, the employee, and the tax-payer who were obliged to contribute them, not to the approved societies who administer them with the consent of the Ministry of Health. Possession may be nine points of the law, but the three classes of the community whose ninepences have made the hoard might not consider that possession of their money entitles the trustees to dictate not only how much is devoted to medical services but how it shall be spent.

Fortunately time does not press, and the 18 months still to run on the present agreement should be sufficient to convince all parties of the essential rightness of the lines of the existing system. There is a steadily increasing public which takes a personal interest in the general practitioner service. It is for the Insurance Acts Committee to initiate an educational campaign in the country and to set out the essential reasonableness of its aims. The issue will be determined largely by instructed public opinion, which will make short work of claims in so far as they are not based on a genuine desire for public health and welfare.

The Viscosity of the Blood.

AVERAGE normal blood is about five times as viscous as distilled water. This is not altogether an unmixed advantage since it gives the heart so much the more work to do. The viscosity is mostly due to the red corpuscles, and the level at which it runs in man is no doubt a compromise between the disadvantages of pumping round a sticky liquid and the immediate and urgent necessity of passing so much hæmoglobin through the lungs every minute. The normal viscosity is in short in the main a result of the fact that we breathe oxygen at a pressure of about 150 mm. of mercury. If this pressure is diminished, as at high altitudes, there is a corresponding increase in the quantity and concentration of the hæmoglobin, and the circulation is evidently prepared to cope with the parallel rise in viscosity up to a certain point, since it could at any time correct it by increasing the volume of plasma and so diluting the blood;

this it does not do. There is, however, a limit to this tolerance. If red corpuscles are continually, causelessly, and uselessly added to the circulating blood, as when the erythroblastic part of the marrow behaves like a tumour and produces splenomegalic polycythæmia, a point is reached when the increasing viscosity is compensated for by an increase in the total volume of the blood. It cannot be without significance that so many cases of Vaquez's disease give a reading of about 150 per cent. on the hæmoglobinometer; this evidently marks the point where an increase in the work of the heart is more disadvantageous than an increase in the total volume of blood. In the end uncontrolled cases of this curious disease seem to die of heart failure, due to too great a viscosity. If we lived in a greater pressure of oxygen, blood with fewer red cells would satisfy our needs and the blood would go round more easily. No example of this is, however, known, but it is a consideration which, with a knowledge of the beneficial effects of breathing oxygen on healthy people, raises a suspicion that an oxygen percentage in the air of 21 is not quite the best that could be chosen for human existence. Anæmic blood has, however, a clear advantage over normal blood from the hæmodynamical point of view, and the lowering of the viscosity helps the heart to increase the rate of circulation and so compensate for the deficiency in oxygen-carrying power. The concentration of the blood in shock is an impediment to the circulation, and its correction by infusion gives a liquid which, by its relative limpidity, is easier for the heart to pump, and by its greater volume increases the efficiency of the pump itself. It is, however, less pronounced and much more common changes in viscosity that are apt to escape attention. Viscosity varies greatly with temperature, and the diminution which occurs, in the absence of any change in blood concentration, in fever, and after severe muscular work, must facilitate the circulation. The amount of carbon dioxide in the blood also has an important influence. This may be due in part to changes in the serum, but in the main is due to the variation in the size of the red corpuscles. These swell or shrink as the blood becomes less or more alkaline. The addition of any acid to the blood therefore increases the viscosity; venous is more viscous than arterial blood, which is perhaps an ingenious arrangement for slowing the circulation through the pulmonary capillaries until the carbon dioxide is disengaged and the corpuscles shrink again.

It seems doubtful whether it is wise to attempt at present to exploit these changes in the interests of diagnosis, and to add a viscosimeter to the habitual armamentarium of the clinical pathologist. The determination of viscosity is not a procedure to be undertaken lightly; the viscosity of defibrinated is not the same as, nor demonstrably proportional to, that of fresh blood, and the physical conditions of experiment require rigorous attention. The broad facts seem clear and firmly established, and it is probably safer in daily work to deduce viscosity from red-cell counts and other procedures of established facility and precision than from direct determinations. It is premature to deal with the finer changes of whole blood or of serum before we have a surer basis of fundamental knowledge. The viscosity of serum is chiefly due to its content of proteid, but the condition of aggregation of these colloids makes a good deal of difference, and this again depends on a series of factors which are ill-understood. Blood is very easy to get, and there is an obvious attraction in examining and measuring this and that quality of so noble a liquid. But there is a perceptible danger that some of the multitudinous procedures of the laboratory to which it is subjected may add little to our knowledge beyond some empirical data of which the significance is dubious and the interpretation impossible. There is evidently room for some solid experimental work before the viscosity of the serum of sick people can take its place in diagnosis.

Disposal of Human Waste.

BIOLOGICALLY man is an agent in the distribution of succulent fruit seeds or a stage in the fertilisation of the surface soil. Should he fail to carry out his part of the rota, the vegetable kingdom on which he depends for his sustenance and vigour must languish for want of the nitrogen contained in his excretions and rejections. It is therefore a matter of more than local politics whether a great urban community discharges its raw sewage into a river and dumps its refuse on a hillside, or whether it enters into harmony with Nature's purposes and makes these waste products available for the furtherance of vegetable life. The rustic is almost obliged for his own convenience to spread his metabolic and culinary remainders on the soil; the townsman, who has only to pull a chain or place a tin pail on the kerb for his sanitary authority to do the rest, has not always been careful to instruct his delegates not to waste these things. Polluted rivers and stinking hill-slopes infested with rats and dipterous larvæ are one side of a picture of which the other side is starved pasturage and unproductive arable land. Some of the county boroughs in the north of England where flourishing industries have doubled and quadrupled the population within human memory have recently turned their attention to biological husbandry, and local enterprise in this direction has received stimulus from the need for economy in a community impoverished by external and internal strife. Sheffield in particular has initiated two experiments which are saving local rates and affording a model for similar action elsewhere.

The first of these experiments concerns the rapid disposal of mixed sewage so as to retain its fertilising value in concentrated solid form, while the effluent is discharged clear and bright into the small river whose name is only known in the locality. Extensive irrigation works are impracticable in the Yorkshire uplands where the valleys are steep and narrow, and the cultivated land for the most part on the hill-tops. Anaerobic processes by which mixed sewage is rapidly liquefied in so-called septic tanks have been discarded, for it has been found impossible in practice to avoid giving offence to the noses of the local inhabitants, and the ammoniacal effluent still needs further treatment involving free exposure to the oxygen of the air before it can be discharged. Investigations at Manchester were initiated before the war by ARDERN and LOCKETT to see whether natural purification by the aerobic bacterial flora of the soil could not be expedited by mechanically increasing the oxygen content of the sewage, compressed air being brought to bear on a mixture of sewage and bacterial sludge by means of perforated pipes and porous diffusers. The Manchester investigation was successful in showing that sewage may be rapidly purified by direct contact with bacterial sludge, the air-bubbles serving the double purpose: chemically, a sufficient supply of oxygen is maintained, and physically, the suspension is kept uniform and in constant movement. The Sheffield experiment has simplified

the process by doing away with the compressed-air machinery and aerating the sludge by keeping it churned up with paddles. A concrete canal, 4 feet wide, 4 feet deep, and three-quarters of a mile long, contains the bacterial sludge kept in a continuous state of circulation at the rate of about 1½ feet per sec. by 18 paddle wheels. In order to save space and make it possible for all the paddles to be driven by one engine, the canal is wound back and forth on itself, the double curves serving to produce eddies which conduce still further to aeration and complete mixture. When first put in use the canal contains just water, plus sufficient bacterial sludge—some 30 per cent. of the total volume—collected from the existing filter-beds of the older system. When the sludge has matured—that is to say, when the proper bacterial flora has developed—raw sewage is let into the canal at one point and mixes with the sludge during its three-quarter mile lap, the excess continually escaping over a weir situated just before the lap is completed, and in a wider part of the canal where, the flow being slower, the sludge has partially settled to the bottom. This overflow is then allowed to deposit the flocculent sludge completely in settling tanks and can then immediately be discharged to the river. The effluent is sparkling and gives ocular evidence of purity by the green algæ which line the channel. Sufficient sludge is pumped back from the settling tank to replenish the circulating system, the remainder flowing away into a well where it can be dried and distributed at leisure. The sludge is quite inoffensive, the whole installation has less odour than a duck-pond, and the process is continuous year in year out, requiring, apart from the motors—22 h.p. in all for paddles and pump—little supervision. One unit deals with half a million gallons of sewage daily in dry weather, increasing to over a million gallons in wet periods, for a population of 22,000, and Sheffield is now converting the rest of its disposal works, expecting to save in running expenses, to set free for other purposes, five-sixths of its present filter-bed system, to obtain the market value for every part per cent. of nitrogen in the dried sludge, and last, but not least, to purge its hygienic conscience. Mr. J. HAWORTH, manager, and Mr. F. W. HODGKINSON, resident engineer of the works, share the credit for the scheme, which they prefer to call bio-aeration rather than use the ambiguous term activated sludge. A community starting its sewage disposal on these lines may do so at half the capital cost of the older system.

House refuse has hitherto been disposed of in Sheffield as elsewhere by dumping or incineration, and now the third alternative of salvage has passed the experimental stage. Its principles have already been described in general terms in our columns. After screening off large light objects, such as old mattresses, the mixed refuse sorts itself, like coal, into dust, small pieces and large pieces in a revolving cylinder perforated by mesh of graduated size. The dust contains enough organic matter to make a good soil dressing as well as enough ash to keep it dry and inodorous; it can, further, as in Halifax, be utilised to absorb the contents of a tub closet-system. The small pieces, even in these hard times, consist largely of coal or coke, and only require 7 to 10 per cent. of tar to weld them into briquettes to warm the public bath water and so recoup the citizen in part for his own waste. Large pieces are carried from the cylinder on to a wide belt from which tins, pots, rags, bones, and other things can be picked off by hand and thrown on to piles which have in quantity definite saleable value. There remains a residue for the gehenna which is still needed to burn up dead carcasses and infective material. Sheffield has demonstrated that salvage on these lines can replace indiscriminate destruction without harm to the health of the workers and without destroying the amenities of the neighbourhood, and is again replacing its experimental plant by a full-sized installation. Public health is well served by such demonstrations which, it should be added, in accordance with good medical tradition, have been offered to the communities without fee.

Annotations.

"Ne quid nimis."

THE ÆTIOLOGY AND PATHOLOGY OF TYPHUS.

THE reported discovery by Dr. N. Kritch of a coccus, resembling the pneumococcus, which when inoculated into guinea-pigs produces the symptoms of typhus fever is too incomplete for any opinion to be expressed on its importance. According to the communications which have been made to the daily press, the organism has been found in 150 cases of typhus, but it is not recorded whether it has been recovered from the inoculated animals. The most detailed and laborious search by competent bacteriologists has hitherto failed to elicit any constant organism other than the rickettsia bodies. The ætiological relationship of these bodies with typhus was strongly suggested by the Typhus Research Commission of the League of Red Cross Societies to Poland, the main report of which has now been published in book form.[1] It is dedicated to the memory of seven investigators of typhus who, as a consequence of their researches, contracted the disease and died. To these names might well be added that of Arthur William Bacot, who served as entomologist with this Commission to Poland, and recently lost his life[2] while pursuing further researches into the ætiology of typhus in Egypt. The report bears further testimony to the high standard of his work; and it is evident that the general conclusions arrived at therein must have been largely influenced by his skilled observations.

The general purposes of the Commission were to make ætiological and pathological studies upon typhus, and the determination of the exact nature of the specific cause of the disease was held to be the most important goal. The transmission of the disease by the body-louse was accepted as proved. Bacteriological methods were deliberately given second importance, and the nature of the demonstrable micro-organisms acquired by lice nurtured upon typhus patients was the primary study. A minute histo-pathological investigation was undertaken as a necessary adjunct. The earliest reaction found was in skin excised on the day the rash appeared, and consisted of swelling of the endothelium of capillaries and small arteries and veins. It was noted that the swollen cells sometimes occlude capillaries completely. By the fifth day mural and occluding thrombi of fibrin were found in arteries and veins in the lower layers of the corium. Subsequent to the fifth day there is involvement of larger blood-vessels, but occluding thrombi of large vessels were excessively rare. Lesions were found in every brain studied, and there was a definite correspondence between the severity of mental and motor disturbances shown by the patients, and the number and distribution of the cerebral lesions found in the histological study. As in the skin, so in the brain, the first evidence of typhus was found in capillaries and pre-capillaries; swollen endothelial cells exhibiting degenerative changes in nucleus and cytoplasm, often accompanied by small platelet and fibrin thrombi, were found in the brains of guinea-pigs killed as early as the first or second day of fever. These endothelial changes were seen in many organs throughout the body and were considered to be the essential lesion of typhus, probably due to the presence of bodies indistinguishable from rickettsia. Such bodies were demonstrated in 21 of the 28 pieces of skin excised ante-mortem, and in skin from all of 25 cases where the post-mortem examination was made before the thirteenth day of disease and while the body was in a fresh condition. Besides the skin, rickettsia were

[1] The Etiology and Pathology of Typhus. By S. Burt Wolbach, John L. Todd, and Francis W. Palfrey. Published by The League of Red Cross Societies at the Harvard University Press, Cambridge, Mass. 1922. Pp. 222. 35s.

[2] See THE LANCET, April 22nd, p. 817.

demonstrated in the kidneys (two cases), femoral vein (one case), testes and adnexa (five cases), and the brain (seven cases). In accepting granules seen as rickettsia their situation was considered as of the first importance, and the only valid localisation was in endothelial cells, as these do not contain granules of any sort except in stages preliminary to division. The bodies described as rickettsia in typhus lesions were considered to be peculiar to typhus, and indistinguishable from rickettsia as seen in the infected louse. Three stages of *Rickettsia prowazeki* are described and figured in the report and correspond closely to similar stages of a parasite described by the same authors as being present in the lesions of Rocky Mountain spotted fever.

With regard to the study of lice, the conclusion arrived at is that the presence of *Rickettsia prowazeki* is proof of the presence of the virus of typhus. Many well-controlled experiments were undertaken before this conclusion was arrived at and are summarised as follows: (1) From the four positive (rickettsia positive) boxes of lice each of the nine lice in which rickettsia were found produced typhus in guinea-pigs. (2) From the four positive boxes there were four lice in which no rickettsia were found; but they produced typhus in guinea-pigs. It is suggested that the failure to find rickettsia in smears of such small amounts as were reserved for examination in these inoculation experiments does not prove their absence from the lice; for, in the examination of serial sections of entire lice from positive boxes rickettsia were occasionally found in but a single cell. (3) From the four positive boxes there were seven lice in which no rickettsia were found; they failed to produce typhus in guinea-pigs. (4) One injection from a negative louse from a positive box yielded inconclusive results in that the guinea-pig died on the thirteenth day of pneumonia. (5) From the negative boxes no louse produced typhus in a guinea-pig; 20 guinea-pigs were injected with lice viscera from these boxes. Micro-organisms other than rickettsia did not appear in any of the 52 experiments as the result of the feeding of lice upon typhus patients. *Rickettsia prowazeki* was distinguished from *Rickettsia pediculi* and *Rickettsia quintana* by the fact that the parasite is intracellular in the louse. Infection of the salivary glands, or other structures of the louse than the gut, was not demonstrated. It is unfortunate that pseudo-tuberculosis complicated many of the experiments and gave rise to fever which was the symptom mainly relied on for a diagnosis of typhus in guinea-pigs. The Commission consider that there is strong evidence for the identity of *Rickettsia pediculi* and *Rickettsia quintana*, as well as for the ætiological relationship of these rickettsia to trench fever, and that this belief predicates that the mass of population in Central Europe is immune to trench fever and tolerant of *Rickettsia pediculi* infection.

Other sections of the report are devoted to technique, clinical observations, the Weil-Felix reaction, cultivation experiments, and bibliography; and appended are 34 beautifully executed plates illustrating rickettsia bodies and histo-pathological studies.

BIOLOGY IN MADEIRA.

Dr. Michael Grabham recently gave one of the Friday evening discourses at the Royal Institution, choosing as his subject "The Biology of Madeira." The lecturer showed that the component islands and rocks on the Madeira Archipelago were separated foci of volcanic ejecta in the abysmal oceanic depths, and the level of the Atlantic waters might be lowered 100 fathoms without merging them in a common connexion. He stated also that of the 170 forms of testacea existing in the region only five species are distributed through the island group, and that such evidence was adversely copious and conclusive as to the theory that the Madeiras are a surviving relic of a former continental extension, though such an adjective as "former" must always carry the qualifications imposed by geological—i.e., indefinite—time. Among striking references to the insular flora, he spoke of Madeira as a focus for dissemination of plants of economic value, describing at length the life-history of the gourd, *Sechium edule*, its remarkable food value, its potency in fat utilisation, and the singular development of the seed-surrounding flesh into the permanent stem growth of the climbing plant. During the stress of war, when German U-boats wantonly destroyed everything, and the island food was restricted to local resources, Dr. Grabham realised the potency of the sechium, and "saw on several occasions the sullen apathy of incipient starvation awaken into reviving animation under this potent influence." In the Bradshaw lecture delivered before the Royal College of Physicians of London last year,[1] it may be remembered that Dr. Grabham described the sub-tropical esculents as present on the island, and in that lecture dwelt upon the striking properties of the *Sechium edule*, or pepinella—"The sechium," he said, "is propagated by planting the one-seeded fruit entire, the whole gourd enlarging into a persistent subperennial rhizome a foot or more in diameter and sending up annually, when well-established, 100 or more shoots to cover a trellis of enormous extent from whence hangs the small fruit in myriads. I know of no other such transmutation of the nutrient surrounding matter of a seed into the permanent tissue growth of the new plant." In Madeira the pepinella is boiled as a favourite vegetable in the winter months, and has an agreeable nutty flavour, together with a great power of combining with fats. It is, moreover, free from fibre and very digestible, and thus can be employed to advantage, boiled with cream or other fats, as a non-irritant food in cases of intestinal irritation or ulceration.

The second part of Dr. Grabham's discourse consisted of an earnest appeal for an organised exploration of ocean flora and deep water biology in the national interest; he considered that a second *Challenger* expedition has been long overdue, while it could be conducted at a relatively tiny cost. The address was illustrated with some beautiful specimens.

AN EASY METHOD OF FINDING TUBERCLE BACILLI IN SPUTUM.

THE so-called concentration method for tubercle bacilli in expectoration in cases where they are present in scanty numbers has been for some time past effected by forming an emulsion with antiformin, which dissolves the cellular and mucous elements and allows the bacilli to fall to the bottom of the liquid. By this method, however, many bacilli of recent development may be dissolved entirely, and others damaged to such an extent as to lose their special staining peculiarities. The concentration, therefore, consists merely in the collecting at the bottom of the liquid of those bacilli which have survived the process with a respective diminution in their total number. Tuberculous sputum to which the process of so-called concentration may be most usefully applied is that from patients in the early stages of the disease in which the bacilli are scanty, and therefore difficult to demonstrate with the ordinary methods of staining. From a negative result the patient feels himself justified in neglecting any kind of precaution, and in such a case it is indispensable that a result should be arrived at which is as near as possible absolutely true. Prof. N. Pane, of the Bacteriological Institute at the University of Naples, has just published[2] a new method in which a concentration of existing bacilli is obtained without any diminution in their number. The suspected sputum is placed in a sterile glass receptacle and four times its volume of physiological salt solution added; this is then incubated at 37° C. for 24 hours. During this time the mucus and cells are liquefied by the proteolytic enzymes produced by the accessory micro-organisms which are more or less abundant

[1] THE LANCET, ii., 1921, 1357.
[2] La Riforma Medica, xxxviii., April 3rd, 1922.

in all sputum. The centrifugalisation of the bacteria is by this means rendered easy by the elimination from the liquid of the organic substances which spoil the clearness of the preparations, and the tubercle bacilli are readily shown by the Ziehl-Neelsen method. In some cases investigation by this method has shown only occasional groups of agglutinated tubercle bacilli. Prof. Pane considers this to indicate a slight immunising defence in the organism.

THE PROBLEMS OF HOOKWORM CONTROL.

RECENT investigations upon the spread of ankylostomiasis in soil and the gradual accumulation of information upon the life-cycle of *Ankylostoma duodenale* have made it possible to apply control measures with increasing precision. In spite of the large amount of work carried out in this disease by the energetic workers of the Rockefeller Foundation, it is becoming increasingly evident that there remain considerable gaps in our knowledge. A series of important papers have recently appeared in the *American Journal of Hygiene* from the pens of W. W. Cost, D. L. Augustine, J. E. Ackert, J. E., F. K., and G. C. Payne. Their work is founded to a great extent upon work done in Sumatra in 1917 by Baermann,[1] who worked out a simple method by which infective hookworm larvæ can be isolated from the soil. His method is based upon the fact that the larvæ will migrate from the dense soil to water of a considerably higher temperature, and, under these conditions, nematodes from a sample from an area reputed to be infective can be collected and counted. The procedure is a modification of that of Baermann, more exact standardisation being aimed at. It is claimed that the mature hookworm larvæ can be differentiated from other free-living nematodes by certain morphological characters. Eradication of hookworm disease by radical treatment of all infected individuals still leaves much to be desired. It is practically impossible to render diagnostic methods so critical as to detect every infected case, and it is felt that a large proportion of time and money is expended in attempts to cure radically every case. It is, of course, much more profitable to prevent the spread of the disease by treating the life-cycle of the hookworm. Efficient sanitation would effect this result, but, unfortunately, in most areas where ankylostomiasis is rife this is difficult to attain. Intimately connected with the question are the educational campaigns which are now being actively conducted. The newly hatched and the mature larvæ are much more easily affected by disinfectants than are the ova, but the disinfectant of election is yet to seek.

The problems which appear to need further investigation can be summed up under three headings: (1) the distribution of the ova and young larvæ in the soil; (2) the spread of infective larvæ by active migration, by physical agencies, by man himself, or by domestic animals; (3) the life-span of the mature larvæ and the conditions necessary for their continued existence. Augustine considers that, contrary to previously expressed opinions, the life-span of the mature larvæ is limited to about six weeks. Furthermore, the more tropical the environment the shorter is the free existence of the larvæ, since their stored food-supply becomes rapidly exhausted. Efficient control of hookworm disease has not from the preventive side yet been attained. As to the cure of the disease, oil of chenopodium is a drug which has been recently advocated for the radical treatment of ankylostomiasis, especially in America. Its use is not unattended with risk. The maximum *individual* dose would appear to be 1 c.cm., but it is best given in three cachets of 0·5 c.cm. each at two-hourly intervals, followed three hours later by a saline purge of 1 oz. of magnesium sulphate. Experiments on carbon tetrachloride, now being carried out in Suva, Fiji, by Mr. C. Hall,[2] senior zoologist to the U.S. Bureau of Animal Industry, would seem to indicate that in this drug we possess an anthelmintic of great potency. No exact information as to the exact dosage employed in Fiji is as yet available, but about 3 c.cm. in gelatin capsules has been suggested. It is said that over 80 per cent. of the worms are expelled after a single dose.

[1] Baermann, G.: 1917. Geneesk. Tijdsch. v. Neder. Ind., vol. lvii., pp. 579–669.

INTRACRANIAL TUMOUR OF THE OPTIC NERVE.

TWO cases of tumour of the intracranial part of the optic nerve are reported in the March issue of the *American Journal of Ophthalmology* from the Department of Surgery at the Johns Hopkins Hospital, Baltimore, and it is claimed that these are the first cases which have been both diagnosed and successfully operated on. The first case occurred in a girl of 13; the chief symptoms were: (1) A partial paralysis of both third nerves. Temporary attacks of diplopia attended with vomiting had recurred at intervals during the previous six years. (2) Progressive loss of vision during the same period but no headache. (3) Primary optic atrophy. Skiagrams showed no enlargement of the sella turcica and no distension of the third ventricle, so that pituitary tumour and hydrocephalus were excluded. Neither was there any choked disc or distension of the nasal sinuses. An operation was performed and two collar-like growths were found symmetrically situated, surrounding each optic nerve in front of the chiasma, with processes extending forwards through the optic foramina. The tumour was wholly removed on the right side and partially on the left with good result, vision in the left eye being partially restored. In the second case practically the only symptom was progressive failure of vision, and an operation to expose the optic nerves was undertaken, as it was thought that all other possible diagnoses had been excluded. A tumour was found attached to the optic nerve on the left side though the sight of the right eye was the worse, and a band constricting the right nerve was divided. Here, too, the usual results of freeing the nerve from constriction were excellent, although it was impracticable at this operation to remove the tumour. Details of operation and the histological structure of the tumours are described, and the treatment hitherto adopted in cases of intra-orbital optic-nerve tumours is criticised. The suggestion is made that in view of their tendency to extend back through the optic foramen it would be wiser in many instances to treat them as intracranial tumours from the first. "If either a primary intracranial tumour of the optic nerve or a secondary intracranial extension of an intra-orbital tumour be present, only an intracranial operation which aims at the removal of the tumour offers the patient any chance of the preservation of life or vision."

COLOUR RESPONSES AND INTERNAL SECRETION.

THE striking transitory changes in body coloration which are seen in the lower vertebrates, such as reptiles—e.g., the chameleon—amphibia, and fishes are brought about by the activity of cells charged with pigment granules and situated in the skin. These chromatophores are partly under the control of the sympathetic nervous system; but recent work indicates that ductless gland secretions play an important rôle in regulating pigment responses. Dr. Lancelot Hogben and Mr. F. R. Winton have shown[3] that extracts of the posterior lobe of the pituitary gland have a very characteristic and highly specific effect on the chromatophores of amphibia, inducing contracted melanophores (black pigment cells) to expand and the xantholeucophores (yellow pigment cells) to contract, so that an intense darkening of the skin results. A frog which half an hour previously was of a

[2] See THE LANCET, Feb. 25th, 1922, p. 391.
[3] Proc. Roy. Soc., B, May, 1922.

pale yellow tint will change after an injection, intravenous or intraperitoneal, of less than 0·00025 c.cm. of a 20 per cent. extract of pituitary (posterior lobe) to a coal-black hue, remaining in this condition for several hours. Adrenalin has precisely the reverse effect, causing the melanophores to contract and inducing pallor in a frog which was previously dark. The melanophore stimulant in pituitary extracts is apparently secreted by the intermediate portion (juxtaneural epithelium) of the gland. It is readily destroyed by trypsin like the pressor, oxytocic, and diuretic principles; but it is not identical with the pressor substance, since it is only slowly destroyed by acid hydrolysis. Expansion of frog melanophores may be induced by extracts of the pituitary gland of mammals, birds, amphibia, and fishes. It is not obtained with extracts from the pituitary of the lizard, nor is it found to follow injection of extracts of the subneural gland of tunicates, a structure which morphologists homologise with the vertebrate pituitary. The reaction may be obtained on the isolated frog's skin, so that its nature is local; and since it is not prevented by paralysis of the nerves which supply the melanophores, it appears that pituitary extracts act directly on the melanophores. Sufficient of the melanophore stimulant can be obtained from the pituitary gland of one frog to induce darkening of the skin in 30 other individuals of the same species. This opposing action of posterior pituitary and adrenalin in the regulation of pigment responses is extremely interesting in connexion with human physiology and pathology. The pigmentation in Addison's disease, where the most constant post-mortem change is a lesion of the suprarenal bodies, may be attributable to the unopposed action of the pituitary; and the areola of pregnancy may also be connected with a disturbance of endocrine balance.

LINGUAL TUBERCULOSIS.

IN a recent thesis devoted to this subject Dr. Marius Pinel [1] states that tuberculosis of the tongue was first described by Ricord whose pupil Buzenet pointed out the differences between it and syphilitic ulceration in his Paris thesis of 1858. Although less common than laryngeal involvement, tuberculosis of the tongue is more frequent than of any other part of the bucco-pharyngeal cavity. Of 44 cases of tuberculous disease of this region collected by Spillmann 21 were examples of tuberculosis of the tongue as compared with 18 in which the pharynx and 5 in which the lips were affected. The male sex is most frequently attacked, 17 of the 21 cases being found in men and only 4 in women. Tuberculosis of the tongue is characterised by its chronic character, progressive course without any tendency to a spontaneous cure, resistance to treatment, and severity of the symptoms. Two clinical forms are described. The first, which is much the more frequent, is the tuberculous ulcer, the second, of which only about 20 cases have been reported, is the tuberculoma. The onset of tuberculous ulceration of the tongue often escapes notice, and it not infrequently happens that the patient does not become aware of the condition until the ulcer is fully developed. The ulcer is almost always single and is usually situated on the tip and sides of the tongue, occasionally on the dorsum, but very rarely on the inferior surface, and almost always nearer the tip than the back. The ulcer extends excentrically by the formation and coalescence of small round macules known as Trélat's granules, which consist of miliary abscesses due to caseation of the follicles in the mucous membrane. In most cases there is an absence of enlargement of the submaxillary and cervical glands. The principal symptoms are pain and excess of salivary secretion, which is aggravated by mastication, deglutition, and phonation. The ulceration slowly increases in extent so that it finally involves the whole surface of the organ. Lingual tuberculoma, the size of which varies from that of a pea to that of a walnut, as a rule is single but is occasionally multiple, so that the whole tongue may be studded with small nodules. It is usually situated immediately below the mucous membrane; much less frequently it is found in the substance of the muscle. The prognosis of lingual tuberculosis is very gloomy, the condition being almost always fatal. As a rule, it indicates an advanced pulmonary infection. The prognosis of lingual tuberculoma, especially if it is primary or the pulmonary lesions are not too advanced, is less serious and a cure may be effected by surgical treatment.

[1] Thèse de Paris, 1922, No. 12.

CHRONIC INTUSSUSCEPTION IN CHILDREN.

LAST year Dr. G. F. Still [1] described chronic intussusception in children—a form of intussusception which does not appear to have been previously recognised. He used the term "chronic" for cases in which the intussusception was present for many days or even weeks without producing acute obstruction. His description was based on four cases, which are of great clinical interest. In all cases the children were brought by the puzzled practitioner to Dr. Still for help in the diagnosis, because the symptoms had not suggested any surgical affection. Intussusception was overlooked because the picture with which it is associated—bloody stools and acute obstruction—was absent. Dr. Still constructed the following composite case on the basis of this experience. On a particular day the child seemed to have abdominal pain and vomited once or twice. During the next few days he vomited occasionally in association with colicky pain. The vomiting became less frequent, occurring only once in two or three days and the pain was only occasional. The bowels, which before the onset were open daily, became less regular and aperients were necessary; but they worked well and the stools were normal except that once or twice there might be a streak of blood, such as may occur in any constipated child. The symptom which troubled the parents most was wasting, which was obvious after three or four weeks. The temperature throughout was normal. A sausage-shaped lump was felt in the abdomen, but it suggested the diagnosis of tuberculous peritonitis. By detecting this and especially by its varying consistence during palpation the diagnosis can be made. Dr. H. S. Schlink [2] has reported a case of chronic intussusception, evidently unaware of Dr. Still's paper. He saw a girl, aged 7 years, with the history that two months previously she was seized with vomiting and diarrhœa after eating bananas. She was put to bed on starvation diet for a week, with the result that the pain ceased and the bowels acted less freely. When she got up and took solid food the pains and diarrhœa returned. At no time did she pass blood—a fact which was responsible for various diagnoses made by half a dozen practitioners who saw her. On examination she was emaciated and sat in a stooping attitude, holding the abdomen with her hands and complaining of terrible pain in the back and around the umbilicus. A large sausage-shaped tumour could be felt in the left lower abdomen. On rectal examination a mass could be felt. X ray examination after a bismuth meal showed that the tumour, which had been variously diagnosed as malignant disease of the sigmoid, sarcoma of the kidney, hydronephrosis, enlarged retro-peritoneal glands, and malignant cyst of the ovary, was an intussusception. On operation it was found to be an intussusception of the cæco-iliocæcal variety (Clubbe). The apex reached well below the junction of the pelvic colon and rectum. The colon was thickened, stiff, and swollen, but of good colour. At first it seemed almost impossible to unfold, but gradually, by squeezing from below and gentle traction from above, the thickened washleather-like colon was unravelled. Although the surface was slightly rough and granular, no adhesions had formed. A few gut sutures were inserted in some peritoneal tears and the abdomen was closed. Recovery was uneventful.

[1] Archives of Pediatrics, March, 1921, p. 174.
[2] Medical Journal of Australia, March 11th, p. 269.

MODERN IDEAS RESPECTING ACIDITY AND ALKALINITY.

WE print in another part of this issue an abstract of a lecture by Mr. F. W. Gamble and Mr. Norman Evers on the modern view of acidity and alkalinity, a subject which has for some time past occupied a good deal of attention. Readers may remember, and may with profit again refer in this connexion to an article on the Reaction of the Blood, by Dr. C. Lovatt Evans, who pointed out the importance of this subject of hydrogen-ion concentration, and briefly explained the pH nomenclature now in vogue.[1] Mr. Gamble and Mr. Evers give an account of the subject viewed from a slightly different and somewhat less specialised angle, and the wide range of its importance will at once be evident. The convenience of the pH nomenclature cannot be too strongly emphasised, so long as it is borne in mind that pH numbers are in reality logarithms, so that if the pH is altered by one integer, the hydrogen-ion concentration has been altered ten times. In days not at all far distant the average medical student was not taught the importance of hydrogen-ion concentration—the mere titration value of buffered solutions such as blood, urine, or gastric contents was all that he was taught to determine. Now he is expected to have some general idea of the methods by which the hydrogen-ion concentration of these fluids may be determined with the aid of indicators. As to blood, the dialysis method, a convenient form of which has recently been described by H. H. Dale and Lovatt Evans,[2] is more practical than the hydrogen electrode method, has already found a place in clinical research,[3] and has been used by Dr. Barcroft in the Andes in the determination of the reaction of human blood at high altitudes. In the titration of a urine mere titration to an end-point is of undoubted value, as giving some idea of the quantity of buffers in the blood. This may be made the basis of a renal efficiency test.[4] But, as Leathes points out, a titration with two indicators tells us still more, in fact it gives us an idea of the hydrogen-ion concentration, as well as of the total amount of buffer. By means of indicators such as those mentioned by Gamble and Evers, and which we owe to the splendid researches of Clark and Lubs in America, it is now an easy matter directly to determine the hydrogen-ion concentration of a urine. It is also now usual, in determining the acidity of gastric juice, to allow for the buffers, and so as to know the amount of free acid present, to titrate the contents to a definite pH.[5]

THE House and library of the Royal Society of Medicine will be closed from Saturday, June 3rd, to Monday, June 5th, both days inclusive.

THE Croonian Lecture of the Royal Society will be delivered before that Society on Thursday, June 1st, at 4.30 P.M., by Prof. T. H. Morgan, who has taken as his subject the Mechanism of Heredity.

THE Croonian Lectures of the Royal College of Physicians of London will be delivered by Dr. Gordon Holmes, on June 8th, 13th, 15th, and 20th, at 5 o'clock, at the College, Pall Mall East. The subject will be: The Symptoms of Cerebellar Disease and their Interpretation.

AN interim committee has been formed for the founding of a medical society devoted to the study of venereal diseases. A letter explaining the aims of the proposed society will be found in another column. The fact that the objects of the new society are purely scientific will make the work of a non-controversial character as far as those questions are concerned whose unending discussion has weakened the professional position with the public.

[1] THE LANCET, 1921., ii., 867.
[2] Journal of Physiology, 1920, liv., 167.
[3] Fraser, Ross and Dreyer: Quart. J. Med., April, 1922.
[4] J. B. Leathes, Brit. Med. Jour, 1919, ii., p. 165.
[5] S. W. Cole and W. J. Adie, THE LANCET, 1921, i., 423,

THE PANEL CONFERENCE.

A SPECIAL Conference of representatives of local medical and panel committees met in London on Thursday, May 18th, to consider the situation created by the National Health Insurance Bill now before Parliament. This Bill authorises payment until the end of 1923 by approved societies of the expiring Treasury grant for medical benefit and administration, and the claim of the approved societies to a voice in the negotiations regarding capitation fee and conditions of service at the end of that period. The conference was held at the Central Hall, Westminster, Dr. H. G. DAIN (Birmingham) occupying the chair.

The Position of the Insurance Acts Committee.

In moving the reception of the report of the Insurance Acts Committee, Dr. H. B. BRACKENBURY, its chairman, set out briefly the relation of doctors, approved societies, and the State as it appeared to that Committee. As far as medical benefit was concerned, he said, the contract under the Insurance Acts was between the doctors and the whole community represented by the State, or (he added) "between ourselves and the patients collectively." The State saw to it that the contract was observed on both sides and the approved societies had no right to negotiate in terms of medical benefit. He recalled two phrases in the statement read by Sir Arthur Robinson to a deputation of the I.A.C. on March 30th last and his own rejoinder on that occasion:—

> You have used two phrases which we were sorry to hear:
> "They [the societies] intend to claim a voice in the negotiations with the medical profession, both in regard to the capitation rates and the conditions of service," and "It is difficult [for the Ministry] to contest their right."

But, Dr. Brackenbury went on, the new charges accepted by the approved societies justified no such claim. The money in question was not produced by the societies but was made up of compulsory contributions from three sources: employer, employed, and taxpayer. There were certainly "approved society *funds*" but no "approved society *money*." The doctors could not and did not contest the right of the approved societies to make their opinions known to the Government and to bring pressure to bear upon it, or the right of the Government to consult the societies. But the claim of the societies for a voice in negotiating the conditions of medical service was untenable, for the approved societies did not represent the insured patients, it was not their money, it was not their sphere, and they were not the employers of the doctors.

No Spirit of Offence.

He said this in no spirit of offence or unfriendliness to a large body of social workers anxious to contribute in their own sphere to the solution of a great social problem. The position in regard to coöperation remained just as it was, as set out in the following passage from the report of the meeting on March 30th already mentioned:—

> Sir A. Robinson: I want to get the views of the profession quite clearly in my mind. The profession will not treat with the approved societies at all?
> Dr. Brackenbury: Not as negotiating parties.
> Sir A. Robinson: The profession will not meet them under any circumstances?
> Dr. Brackenbury: That, of course, is for our Conference to say, but so far as I can say at present, that would be the view of the profession, in regard to meeting them as negotiators.
> Sir A. Robinson: I want that to be quite clear, for the Minister's information.
> Dr. E. A. Gregg: That refers to remuneration; I should be sorry for it to be said that we as a profession would not meet the approved societies on other matters.
> Sir A. Robinson: With regard to remuneration, then, under no circumstances will the profession meet the approved societies?
> Dr. Brackenbury: On remuneration and terms of service. With regard to improvement of the service, we are perfectly ready to meet with anybody and everybody who can suggest

means of making the service better. But we cannot consent to negotiate with the approved societies on remuneration and terms of service.

Insistence upon Direct Negotiations.

The discussion following Dr. Brackenbury's statement turned largely on the exact meaning to be attached to the word "coöperation," a number of representatives desiring to limit the powers of approved societies strictly to the administration of sickness benefit. Dr. Lauriston Shaw's appeal to regard the relation between panel doctor and patient as that of "producer" and "consumer," no middle-man being entitled to step in and make profits between them, met with sympathetic reception. Finally, after withdrawal of several amendments the motion of the I.A.C. was passed unanimously in the following form :—

This Conference insists upon the continuance of the system of negotiating the actual terms of the contract of service which has prevailed since the coming into force of the National Health Insurance system—i.e., direct negotiations between the Government and the profession without the intervention of any third party, but will continue to welcome the coöperation of all those interested in the development of the best possible medical service for insured persons.

To Promote Coöperation.

To promote this development a motion by West Sussex proposed a conference, to meet at least annually, consisting of representatives of the I.A.C., of insurance committees and their clerks, and of approved societies. Without making any definite recommendation, it was agreed to refer to the I.A.C. the question of arranging a conference with these or other bodies, the subject to be brought up again at the October session.

A Clause in the National Health Insurance Bill.

On a motion by Essex to the effect—

That the Insurance Acts Committee be instructed to take steps to secure the insertion in the National Health Insurance Bill, now before Parliament, of an additional clause providing that the acceptance by the Government of the proposed contribution out of the benefit funds of the approved societies shall not confer on the approved societies any right to ask hereafter for any further measure of control in insurance matters than they have at present,

attention was called to an ambiguous parenthesis in the first clause of the present National Health Insurance Bill, which runs: "There shall be paid . . . . out of the benefit fund of every approved society . . . . by way of addition to the sums payable under sub-section (1) of section seven of the N.H.I. Act, 1920, and *subject to such conditions as may be prescribed*, but not exceeding . . . ." Dr. Brackenbury explained that the Minister of Health would shortly make a considered statement of the meaning to be attached to these (italicised) words, and the Conference decided to leave the I.A.C. free to act upon this when the occasion arose, the Essex motion being qualified with the words "if necessary" after "take steps," and carried in this form.

Approved Society Funds.

Suggestions which would have as their effect the replacement of the approved societies, immediate or gradual, by a State-controlled machine, found little support at the Conference. Two motions to the following effect were decisively rejected :—

That the I.A.C. be instructed to explore every possible avenue that might lead to the consolidation of all National Health Insurance under one State-controlled body, preferably the Ministry of Health, by whom alone, and through whom alone, all benefits should be dispensed.

That in the opinion of this Conference, National Health Insurance would be more efficient and more beneficial, the service more attractive and of a higher standard, and the administration more economical if the present system of deposit contributors were extended to embrace all insured persons and the financial arrangements for deposit contributors so modified that the good lives should carry the bad.

But the next motion on the agenda was carried, reiterating the thesis that, since the surplus funds in the possession of approved societies are statutory funds under the control of the State, their use by the State for contributing to the cost of medical benefit does not, and cannot legally, in itself confer any right upon the societies to claim any share whatever in the administration of medical benefit. These funds, it was suggested at the conference, had been accumulated to some extent by withholding benefit from insured persons who were entitled to it.

The Dispensing Capitation Fee.

Dr. J. P. Williams-Freeman moved the reception of the report of the I.A.C. upon the question of the proposal by the Ministry of Health to reduce the present dispensing fee of 2*s.* per head for rural insurance practitioners. In December last representatives of the I.A.C. met representatives of the Ministry of Health and were informed of the proposal to make a reduction in the fee paid to chemists which would, it was estimated, reduce the cost of dispensing to 1*s.* 9*d.* Dispensing practitioners were to be asked to accept the same capitation fee for dispensing for the next two years, being relieved at the same time of the cost of supplying malt and cod-liver oil, these to be charged to the drug fund. After consultation with the rural practitioners and general purposes subcommittees, a deputation, consisting of Dr. H. B. Brackenbury, Dr. J. P. Williams-Freeman, Dr. T. Wood Locket, and Dr. T. Cuming Askin, placed before the Ministry on Dec. 20th the case against the proposal to reduce the fee. Stated briefly this case was: That the rural practitioner's services in dispensing have not been adequately remunerated in the past; that they do not run parallel with those of the chemist, and ought not to be rigidly subject to the same financial fluctuations; and that the 2*s.* capitation fee should be regarded as a premium which has not been sufficient hitherto, and since there has been a loss in 1920 and 1921, it should be continued for at least the next two years now that prices are beginning to come down. Special consideration was due to the dispensing doctor for sundry reasons, one of these being thus effectively put :—

The chemist has fixed hours. He can—and often does—refuse to dispense for late comers and emergencies. The doctor not only has to dispense for emergencies at all hours, but the man with the punctured bicycle, or the child delayed by the rain, who arrives from a distant village after the practitioner has at last shut up the surgery and started dinner, has to be attended to in deference to common humanity, if not to the regulations.

There are two services which the rural practitioner has to undertake from which the chemist is completely free—that is, arrangements for the sending of medicines and the supply of containers. Neither is obligatory under the regulations; neither is financially important, but both have to be undertaken if the patient is to benefit from medicinal treatment, and the first, at least, is one of the constant minor worries of the day's work. Planning how a patient six or more miles away in the country can get his medicine, trying to remember which are the carriers' days or the bakers' days, or which postman delivers to an outlying house, trying to arrange to drop the medicine on one's round, sending the bottle to the post office or the postman's house overnight, packing bottles in parcel post boxes, &c.—all this constitutes a perpetual drain on one's attention and temper. It is simply futile to say that it is not in the contract. Like supplying the forgotten bottle to the penniless child messenger, it has to be done if the patient is not to suffer, and it ought to be taken into consideration in fixing the dispensing fee.

No reply having as yet been received from the Ministry, it was believed that no interference with the dispensing fee was contemplated, the rural practitioner having in the reduction of his capitation fee already borne his share in the concession to economy. In this belief motions of protest before the conference were withdrawn.

Mileage.

Protest was recorded against the fixing of mileage fees upon the basis of figures collected during the year May, 1920, to May, 1921, in which, owing to the mildness of the winter and the absence of any serious epidemics, the sickness incidence was much below the average. A motion by the I.A.C., which was agreed to, urged upon panel committees the need for collecting data and the further use of what have been described as the "horrible little buff cards," by which alone

effective protest can be made against reduction in the special mileage fund.

National Insurance Defence Trust.

Finally, several motions were approved, almost without dissent, reiterating the urgent need for all panel and local medical committees to contribute to the National Insurance Defence Trust, on the general grounds that any effective fight could not be conducted without adequate funds and that any committee voting on the disposition of funds to which it had made no contribution would be placed in an invidious position.

THE ROYAL SOCIETY CONVERSAZIONE.

THE time and space available at a function which is social as well as scientific varies inversely with its success. It is therefore a tribute to the popularity of this annual May guest-night of the Royal Society that there is rarely sufficient time for Fellows to greet all their friends and colleagues present, and never space to examine closely more than a few of the exhibits. This year's function was no exception in the number of those gathered together, or of the interesting specimens and apparatus demonstrated.

THE MEDICAL EXHIBITS.

Of the exhibits with a direct bearing on medical problems the most attractive were those grouped in the Committee Room, where Sir Almroth Wright, F.R.S., demonstrated the technique used in his new investigations on immunity, described in THE LANCET of May 6th (p. 904). A simple method of measuring the bactericidal power (1) of the blood with its complement of active leucocytes, (2) of the blood with its leucocytes inactivated, (3) of the separated serum was shown. The production in vitro of protective substances in a sample of blood and the transfusion of this immune blood into a patient who is incapable of developing the appropriate reaction without help, may well alter completely the prognosis of those cases of septicæmia which do not respond to ordinary vaccine treatment. Definite proof that the immune reaction depends on the leucocytes as well as on the body fluids is now forthcoming and the therapeutic possibilities of this new work are not easily to be estimated.

The Lysozyme.

A phenomenon equally interesting but of less direct bearing on treatment is the curious lytic power on certain bacteria of body tissues and secretions. Dr. Alexander Fleming showed Petri dishes containing culture medium with a heavy growth of bacteria except in a small central area, varying from the size of a sixpence to that of a half-crown, in which the lysozyme-containing substance had been embedded. He has discovered that the growth of certain bacteria is inhibited in different degrees by tears, saliva, urine, and by small portions of body tissues taken post mortem. The secretions producing the greatest effect are tears, which act in dilutions of 1 in 5,000,000. Among the most potent of the tissues are the wall of the stomach and also cartilage—a curious finding since cartilage is one of the most inert of all the tissues of the body. Another interesting point is that occasionally colonies of bacteria appear on the culture medium in spite of the presence of lysozyme, and these resistant strains are immune also to the action of the lytic substance contained in all varieties of tissues and secretions. The action of lysozyme may be seen macroscopically, for a cloudy emulsion of bacteria becomes clear almost at once on the addition of a tear-drop. The lytic power is not confined to animal tissues or to secretions since a piece of turnip gives the same effect. White of egg shows very strong lytic power. The lysozyme is not used up in the process, but on the contrary it is found that after solution of large numbers of microbes there is more of the lytic principle present than there was at the commencement.

The fascinating possibility that this work may lead to new types of disinfectants suggests itself. A curious fact, however, is that the pseudo-tubercle bacillus of rodents, which is morphologically and culturally similar to *B. pestis*, is dissolved by lysozyme while *B. pestis* is not; similarly the *Bacillus abortus* of Bang, which closely resembles that of Malta fever, is dissolved, but not the Malta fever bacillus. In both these cases it is the bacillus non-pathogenic to man that is affected.

New Apparatus for Microscopy.

The National Institute for Medical Research showed a new type of microscope outfit for research work, of great stability. The illuminant is a mercury-vapour lamp of new design and high efficiency, and the light intensity can be so modified that under any conditions of use the light that reaches the eye is constant in quality and quantity. In photographing micro-organisms by means of ultra-violet light it has recently been found possible to utilise shorter wave-lengths than any hitherto used. Photo-micrographs were shown to demonstrate the result of photographing stained bacteria by visible light and unstained living bacteria by ultra-violet light.

Messrs. Ogilvy and Co. showed a new electric microscope lamp for research work, which is also useful for examination of ear, nose and throat, and a new combined mono-binocular microscope.

Anthropological and Biological Exhibits.

Prof. G. Elliot Smith, F.R.S., and Prof. John I. Hunter showed the reconstructed Piltdown skull and endocranial cast, with a series of other models and drawings to illustrate the progressive expansion of the brain in the human family, and the resultant changes in the form of the skull and the poise of the head on the vertebral column.

Models illustrating the mechanism of "siphonal" and branchial respiration in a gastropod mollusc were shown by Mr. G. C. Robson, and also living *Ampullaria vermiformis*. The hollow air-tube which can be extruded through vegetation to the surface of the water is several times the length of the gastropod. Preparations and drawings of the gastropod *Hypsobia nosophora* were demonstrated, showing modification of the gill and pallial cavity for aerial respiration. This form represents an early stage of the general process by which the gastropod pallial cavity was transformed into a "lung."

The important researches of Dr. Lancelot Hogben and Mr. F. R. Winton on the effect of pituitary extracts on frog melanophores are discussed on p. 1057 of this issue of THE LANCET.

Some Physiological and Physical Exhibits.

The Cambridge and Paul Instrument Co., Ltd., showed an instrument for measuring the percentage of carbon dioxide in alveolar air, devised by Prof. A. V. Hill. The patient breathes out in the ordinary way and then, by an effort, expels through a katharometer of the Shakespear type, the residue of the air in the lungs. The percentage of CO_2 in this residue is then read on the indicator scale, which is calibrated $0-10\%$ CO_2. The whole outfit is contained in a portable case.

Prof. H. B. Baker, F.R.S., demonstrated the effect of long drying on the boiling-points of liquids. The boiling-points of ten liquids, mercury, benzene, bromine, alcohol, ether, &c., have been shown to exhibit a remarkable rise when dried, through the agency of phosphorus pentoxide, for seven to nine years. This rise varies from 26° to 62° with different liquids. The reason of the rise in boiling-point is probably the increase in size of the molecules, an explanation which is supported by the rise in the surface tension of the liquids.

Dr. J. S. Anderson, of the National Physical Laboratory, showed an immersion method of measuring the internal diameters of transparent tubes. The method consists in immersing the tube to be tested in a suitable liquid and varying the w ve

length of the illuminating beam until equality of refractive index is obtained. The system being now homogeneous, the internal diameter of the tube can be measured directly. He also showed a simple method of differential refractometry applicable to such problems as the comparison of the salinities of different samples of sea-water and the determination of the relative degrees of purity of various liquids.

The Advisory Committee on Atmospheric Pollution showed specimens of smoke, fog, and volcanic or cosmic dust particles from the air, and an apparatus for trapping dust in operation.

Sir William Bragg, F.R.S., and Prof. W. L. Bragg, F.R.S., exhibited models of crystal structure as determined by X ray analysis.

During the evening Lord Rayleigh, F.R.S., gave a lecture on the Aurora Borealis and its Spectrum. Photographs were shown illustrating some recent spectroscopic investigations on the aurora, particularly its occurrence on ordinary nights in the south of England.

THE NEW "SOCIAL SERVICE" OF THE PARIS HOSPITALS.

SINCE the war more than usual attention has been bestowed on all allied services which could be calculated to supplement and complete the treatment given to the patients in the Paris hospitals. During the war the American Red Cross organised a service to help the French soldiers who were being treated for tuberculosis in the various pavilions built to meet the emergency, other assistance than that which came under the head of medical treatment being needed; and to denominate this sort of work the term "Social Service" was adopted. Funds were collected but sympathy did not stop short with money. To the medical staff there were added lay helpers, termed social assistants, whose duties were arranged under medical advice. The first duty of such assistants was that of tranquilising the patient in regard to his family, by meeting his friends, communicating with distant parents, or assisting those nearer at hand if circumstances warranted their help. Thus efforts were made from the beginning to create an atmosphere of confidence and sympathy. Later the patients were given information concerning all existing institutions that could help them on leaving the hospital, and the preliminary inquiries were made for them.

General Aims and Ideals.

After the war a French committee was formed to continue and to elaborate what the American Red Cross had begun, the work of the Social Service having obviously application to the civil population in times of peace, even though the need for it was not as urgent as it had been in the case of the soldiers. While the help given has not been restricted to the sufferers from any particular disease, it has been concentrated mostly upon tuberculous patients. Here intervention between the institutional and domestic care of the patient is obviously needful, as the disease may be communicated to other members of the patient's family upon discharge from the hospital. Thus the social assistant visits the family, to see what can be done to lessen the risks of contagion, arranging in suitable cases for sojourn in the country. There are many institutions in France for the treatment of tuberculosis, and organisations exist for finding suitable occupation for those who are still able to work. The new Social Service will help the patients and their family in all the directions indicated after they have left the hospital. It will deal with those economic, hygienic, and social questions which are different from medical problems and yet have so direct a bearing on the health of patients. For instance, there are the relations between the sick man and his employer. The fear of losing his employment, the desire of returning to work too soon lest someone else should take his place, are all difficulties that the tactful and respected member of an authorised Social Service may be able to overcome. The knowledge that his interests are in good hands, and the freedom from anxiety thus engendered, are auxiliaries to medical treatment that the Social Service seeks to provide.

The Tuberculosis Service.

In regard to tuberculosis such a service has been organised already in connexion with the hospitals of Ivry, Cochin Bicêtre, Laennec. With the exception of an annual subvention of 20,000 frs. from the Ministry of Hygiene, the Social Service is maintained by voluntary subscriptions. The money thus obtained is devoted to the payment of assistants, who have to give their whole time to the work, and to supplying many small things not budgeted for in the accounts of the hospitals. This comprises notably raw material for work, whereby the handicrafts on which some of the patients are dependent can be exercised. Many can only work a few hours per day, but the little which they can do helps them in purse and especially in self-esteem, and busy patients do not brood idly over their ailment. Raw materials may be expensive, tools are certain to be; and expert teachers also have to be paid for. It is the providing for all these contingencies which is catalogued under the heading of Social Service. In connexion with the treatment of tuberculosis this service during the first year raised, in all, 60,327 frs. and only spent 36,087 frs. The second year of its existence is now drawing to its close, and it is to be hoped that this support has been maintained and the activities of the service still further extended.

The Maternity Service.

At the end of May, 1919, Dr. Adair, who was then at the head of the American Red Cross pre-natal service, started a medical social service in the maternity hospitals. The results were so encouraging that when the members of the American Red Cross left Paris the Director of the Public Relief Administration determined to establish a Medico-Social Maternity Service and appointed four trained nurses for that purpose, one for each of the four great maternity hospitals of Paris. The guiding principle is that the struggle against infant mortality must be commenced before the infant is born, and the problem in Paris is exactly the same as it is in this country. And it is being solved by the Social Service organisation on lines similar to our own efforts, though in this country the ante-natal ministrations are not necessarily focused on a hospital. A large proportion of the future mothers who come to the hospital for advice are very ignorant—they do not even know to what help they are entitled. They have to be taught how to take care of themselves and how to prepare for the expected child. The function of the nurse engaged in this new Social Service is first to listen very carefully to the medical advice given, then to visit the future mother, find out what her home conditions are like, what chance the child will have of living when born, what practical or perhaps moral aid is needed. The nurse thus becomes, or studies to become, the mother's confidante and friend. At some convenient centre the future mothers meet once a week and here, under the advice of someone specially appointed to teach them, they prepare the layette. Great care has to be taken at this stage not to wound the pride of future mothers; or, on the other hand, to pauperise those who have too little pride. And always the attempt is to spare the mother from anxiety as her time approaches by attempting to keep the husband in work and to arrange for temporary management of the family. It is in regard to illegitimate children that the greatest strain on Social Service may occur, though in France the respect for motherhood is so profound that it over-rules many other considerations. Austerity and unkindness find no place where mother or child cry for help. Pathetic, indeed, are the stories told by the maternity Social Service nurses about the gratitude, the joy, of the unmarried mothers for whom they have found the means or the work that enabled them to keep their

child instead of sending it away to some foundling home. This Social Service for maternity cases exists at the hospitals of Saint-Antoine, Lariboisière, Tenon, and Boucicaut, and will soon be extended. The Minister of Public Hygiene has given a subvention of 10,000 frs. and the total annual receipts for the last year amounted to 47,984 frs., so that the institution is mainly dependent on voluntary subscriptions.

The Children's Service.

Only quite recently has a special section for children been formed within the ranks of the Social Service. Where it is in working order the home of every child brought to a hospital is visited, so that the health of the other children may be observed. It is the duty of this branch of Social Service to send suitable cases to the country, to the sea-side, or to secure more wholesome lodgings for the family, and perhaps better employment for the breadwinner. The section for children being but recently constituted has no report to present, but we know that it attended to 182 cases during the first three months of its existence and 341 cases during the next three months, an increase showing that its services were appreciated.

All these different branches of the Social Service have their head office at No. 3, rue de Berri, Paris, VIII^e^., where the records are kept and the committees meet.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.

A MEETING was held of the Executive Committee of the Fellowship of Medicine and Post-Graduate Medical Association last week, at which a report was submitted from a subcommittee on the future policy of the Fellowship, while the rules of the revised constitution came up for approval.

The revised constitution defines the objects of the Fellowship as follows:—

(*a*) To provide the medical profession with an organisation that will facilitate intercommunication on all subjects of professional interest and will promote mutual hospitality.

(*b*) To provide in Great Britain and Ireland facilities for post-graduate education to be open to all persons qualified to practise in their own countries, and to assist in obtaining similar facilities for members in other countries.

Members of the Association will be those individuals who are sympathetic with and can assist in the promotion of the above objects, and members who have been nominated by some institution for election. The constitution and rules provide in the usual manner for annual general meetings, elections on to the Council, and elections of honorary officers and trustees, and arrange for standing subcommittees, of which there are four dealing with, respectively, finance, education, social developments, and, lastly, general purposes.

The report of the subcommittee on the future prospects of the Fellowship frankly recognises that persevering attempts to establish a central hospital and school for practitioners have so far failed, and alluded to the fact that some of the institutions at which post-graduate teaching is at present conducted have withdrawn from coöperation with the Fellowship. As financially the clinical courses in a series of grouped hospitals have not proved successful the report recommends a modified policy. This policy proposes to make the organisation of the Fellowship the main portal through which intending students can be invited to post-graduate study in London, and to effect this by getting into immediate coöperation with existing post-graduate institutions to make a comprehensive programme. The resulting programme being announced in a bulletin and in medical journals, the several institutions, the report suggests, should charge an inclusive fee to cover the clinical opportunities and should organise lecturing arrangements within their individual teaching programmes. The Fellowship would deduct a percentage of each fee paid through its organisation, but it will require the payment of an annual membership fee also to the Fellowship to make a sound financial scheme. The last suggestion of the subcommittee's report is that a dean should be appointed to interview and advise practitioners.

As will be seen, the main change in the new constitution from the old one is a recognition of corporate members, while in the report by the subcommittee on policy it is frankly recognised that the ideal of a central hospital and school has to be abandoned. A deputation consisting of representatives of medical education throughout the country will be sent to the Minister of Health, asking that the Government will shortly take steps on the lines of the Athlone Report, especially in regard to post-graduate education.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

Criminal Attack on a Practitioner.

IN Kolozsborsa, a village which supplies meat to Kolozsvár, the capital of Transylvania, the village doctor recently made several complaints to the county judge to the effect that butchers were slaughtering animals not at the slaughter-house but at their homes, and that sometimes diseased animals were slaughtered and unwholesome meat sold to the public. The judge punished the offenders by forbidding them for four weeks to slaughter for sale. After the lapse of this time a butcher again slaughtered a cow on his private premises, whereupon the doctor reported the case to the chief veterinary surgeon of the district, as anthrax was epidemic at the time. The butcher was sentenced to 14 days' imprisonment, and after his release threatened to drive the doctor from the village, if necessary by force. Three days later the doctor was summoned to a patient at 10 P.M., and found only a mild case of tonsillitis, not sufficiently serious to require a night call. Shortly after the doctor left the house he was assaulted in the darkness, receiving heavy blows about the head and body. He collapsed, was found unconscious on the road a quarter of an hour later, and was taken home, being conveyed to hospital next day. His injuries amounted to severe bruises on the lower jaw, the loss of two teeth, and a fracture of the left upper arm. His assailant has been arrested and taken into custody.

Alleged Profiteering by a Medical Man.

A medical man in Nagykörös, near Budapest, recently charged 5000 crowns (present value £2, but purchasing value in a village about £6) for a single visit to a patient who lived not far from the doctor's residence. This patient sued the doctor for "profiteering," but the court dismissed the case. The plaintiff appealed, however, to a higher court, which gave judgment against the doctor, on the ground that the demanding of an exorbitant fee for professional services was to be regarded as profiteering, and was therefore illegal. It was decided that mental workers could fairly be considered as profiteers in such cases; no exception could be made concerning doctors, for although the latter did not technically receive "wages," their services came within the accepted meaning of "work."

A Question of Breach of Professional Secrecy.

In a provincial town in Hungary a professional man, a lawyer, was recently treated for urethral stricture by a specialist who is generally supposed to limit his work to venereal disease. After treatment the lawyer omitted to pay his bill; the doctor waited three months, and then sent the bill by post. The letter enclosing the bill was handed to the lawyer's wife, the lawyer himself being out of town. The wife concluded from the bill that her husband suffered from venereal disease; suspecting immorality, she threatened to divorce him, thereupon the lawyer sued the doctor for breach of professional secrecy by sending a bill by post, thus making known the fact

that his patient underwent medical treatment for venereal disease. The court acquitted the doctor, it being argued that the lawyer as a married man, ought to have been more careful in settling his bill, and that the doctor had shown sufficient patience in waiting three months for his fee, which ought to have been paid at the termination of the treatment. The bill did not actually state what treatment the patient received; it simply contained a request for payment of the amount due.

April 28th.

Obituary.

CHARLES LOUIS ALFONSE LAVERAN.

THE death of Prof. Laveran at the age of 76, on May 18th, following so closely that of Sir Patrick Manson, removes another of the great pioneers of tropical medicine. Laveran was the actual discoverer of the malarial parasite of man, and both he and Manson conjectured that the mosquito would be found to play a part in its transmission, a theory which obtained final proof from the researches of Ross in India, and Grassi, Bignami, and Bastianelli in Italy. Laveran's researches covered a wide field in the realms of parasitology. He was an indefatigable writer and a complete list of his publications would cover several pages of this journal.

Alfonse Laveran was born on June 18th, 1845. He commenced his medical studies at the civil hospital in Strasburg, where he graduated doctor of medicine in 1867 with a thesis entitled Recherches expérimentales sur la régénération des nerfs. In 1874 he was appointed to the staff of Val-de-Grâce School of Military Medicine in Paris. He served in N. Africa from 1878 to 1883, and there conducted the researches on malaria which have made his name famous. Returning to France in 1884 he occupied the chairs of military hygiene and clinical medicine at Val-de-Grâce for ten years. For a short period after this he held the post of médecin chef of the Hôpital Militaire at Lille and director of the Service de Santé at Nantes, and during this period his brilliant observations on the parasite of malaria received confirmation at the hands of Italian workers. Honours commenced to shower upon him. He became a member of the Académie de Médecine in 1893, and member of the Académie des Sciences in 1895, while various other medical and scientific bodies felt it an honour to include him on their roll of Fellows. He was elected an honorary Fellow of the Imperial Military Academy of Medicine of St. Petersburg, a Foreign Member of the Royal Society of London, a Fellow of the Medical and Chirurgical Society, and honorary Fellow of the Royal Society of Tropical Medicine and Hygiene. In 1889 the Académie des Sciences awarded him the Bréaut prize and the Cothenius gold medal. In 1905 he was awarded the Mary Kingsley medal by the Liverpool School of Tropical Medicine. He became a "médecin principal" of the army, an officer of the Legion of Honour, and was universally recognised as the highest authority on military hygiene and sanitation.

There was opening up before him a public career of such brilliance that it would have attracted many a man of high scientific attainments. But not so Laveran. His early experience of microscopic investigation had so fascinated him that he longed for the quiet and seclusion of a laboratory where he could pursue his studies without interruption. Accordingly in 1897 he suddenly abandoned his public career and retired to the Pasteur Institute of Paris, where he became Professor, and, finding the atmosphere congenial, remained constantly for the next 25 years. His interest in malaria was first aroused in 1878 by the characteristic malarial pigment in the liver and brain of fatal cases. This pigment, of course, had been previously noticed, but it was Laveran who observed the same granules of pigment in the blood enclosed in crescent-shaped bodies or in spherical structures which exhibited amœboid movements. He regarded these bodies as parasites, but was not absolutely convinced till 1880, when at Constantine he observed for the first time the striking phenomenon known as flagellation of the crescents. His views were received with doubt in many quarters, but with that doggedness and determination which characterised all his subsequent work he remained true to his beliefs, which were finally recognised in 1889 by the Académie des Sciences, and in 1907 by the award of the Nobel Prize for Medicine, which he devoted to the establishment of laboratories of protozoology at the Pasteur Institute. In the same year he was elected first President of the Société Pathologie Exotique of Paris.

At the Pasteur Institute Laveran devoted himself to the study of protozoal parasites, especially those forms which occur in the blood and are pathogenic to man and animals. The discoveries of trypanosomes as the cause of nagana by Bruce and his co-workers in Zululand in 1896, and by Dutton in man in the Gambia in 1902, attracted his attention, with the result that he undertook the study of these organisms chiefly in collaboration with his colleague, Prof. Mesnil. He carried out a long series of most intricate researches into the behaviour of these organisms in experimental animals, in the hope of discovering a remedy for the dreaded sleeping sickness of Africa.

With the discovery of leishmania as a cause of disease in man Laveran undertook the study of these organisms, and has published the most complete account of the diseases they produce that has yet appeared. Laveran was an acute observer and had absolute confidence in his own observations and opinions, to which he adhered with almost stubborn persistence. For example, most authorities now believe that there are three species of malarial parasite producing disease in man, but Laveran adhered to his original view that the variations observed were an indication of the polymorphism of the single species. Again, he devised an immunity test for the separation of trypanosomes, and concluded that any trypanosome which could be inoculated into a goat or other animal which had acquired an immunity to another trypanosome was a distinct species. Though the criterion is not generally accepted, Laveran maintained his opinion that it afforded a reliable means for distinguishing species. Since the views to which he clung so tenaciously were no mere dogmatic assertions, but were the outcome of personal observations extending over many years, one could not but admire his refusal to relinquish them readily.

Those who have had the privilege of knowing Prof. Laveran personally can well understand the admiration and respect with which this great man was regarded. Those who did not know him would find it hard to realise how complete was his absorption in his work. From 8 A.M. till 8 P.M., with only the usual break for déjeuner, he was to be found in his laboratory on six days in the week. Sunday afternoon alone was spent in recreation, which consisted frequently in reading at home or planning future researches. Laveran objected to interruptions in his work, not because of any harshness of temperament, but because he was reluctant to lose a moment of time. He was, however, always ready to listen to anyone who had serious matters to discuss, though he found it irksome to converse except in French. He found time to publish many comprehensive treatises. While in 1867 he wrote on the regeneration of nerves, in 1873 he published a treatise on tuberculosis. In 1875 appeared the Traité des Maladies et Épidémics des Armées, while in 1880 he published in the Proceedings of the Academy of Science his famous paper entitled Note sur un Nouveau Parasite Trouvé dans le sang de Plusieurs Malades Atteints de Fièvre Palustre. His observations on malaria appeared in book form in 1884 as the Traité de Fièvres Palustres, in 1891 as Du Paludisme et de son Hématozoaire, and in 1898 as his Traité du

Paludisme, a new edition of which was issued in 1907. In 1894, in collaboration with Teissier, he published a book entitled Nouveau Éléments de Pathologie Médicale, and in 1904 appeared the well-known Trypanosomes et Trypanosomiases, written in collaboration with Prof. Mesnil. A new edition of this book, which had been translated into English, appeared in 1912, while in 1917 he reviewed the whole subject of kala-azar, oriental sore, and allied diseases in his work entitled Leishmaniases.

These form but a small part of the numerous papers issued by this remarkable worker, and almost everything he wrote was a practical record of facts observed by himself. Herein lies the immense value of his work. He was a man of iron constitution, stupendous energy, and quite unusual powers of mental application. Combined with these characteristics he had the true scientific mind, which entitles him to be remembered as one of the great leaders of scientific research.

WILLIAM DUNNETT SPANTON, F.R.C.S. ENG., F.R.C.S. EDIN.

IN our last issue we referred briefly to the death, at the age of 81, of Mr. W. D. Spanton, who was living in retirement at Hastings. Spanton completed his medical education at the Middlesex Hospital, becoming M.R.C.S. and L.S.A. in 1862. He spent some time at the Royal Infirmary, Sheffield, and in 1865 settled in Hanley, where he remained a successful and widely-known practitioner until his retirement in 1911. He held the post of consulting surgeon to the North Staffordshire Infirmary, and was at one time president of the British Gynæcological Society and president of the Staffordshire branch of the British Medical Association. A man of many interests, Spanton was a justice of the peace for the county of Staffordshire, and the author of books and articles on medical and other subjects. A little over a year ago [1] we reviewed in these columns his autobiography, in which, under the title of "The Story of My Life," he gave an interesting account of a long and useful, if uneventful, life. Professionally he was known by his invention of an instrument for the radical cure for hernia, but the operation which he devised is now very little used. He became F.R.C.S. Edin. in 1881, and F.R.C.S. Eng. in 1898 (under Section 21).

HUGH PERCY NOBLE, M.R.C.S., L.R.C.P. LOND.

Dr. H. P. Noble, of Kendal, Westmorland, son of Dr. Samuel Clarke Nobel, V.D., J.P., D.L., who survives him, received his medical education at the Middlesex Hospital. He obtained his diplomas of M.R.C.S., L.R.C.P. in 1896, and graduated M.B., B.S. (Honours) of London University in 1897. He adopted anæsthetics as a specialty, and was appointed anæsthetist to the Middlesex Hospital and the National Dental and Paddington Green Children's Hospitals. His wide experience and sound judgment and pleasing personality combined to place him in the forefront of his specialty, and he acquired a large practice and an extensive circle of friends. In 1909 he contracted typhoid fever, and passed through a severe attack and relapse. After a long convalescence he returned to full work, but in 1914 he developed the malady from which eventually he died at Bude on May 15th. This necessitated his giving up all his work and living in the country. He bore his trials and disappointments with exemplary patience.

[1] THE LANCET, 1921, i., 599.

EASTBOURNE EYE HOSPITAL.—At the annual meeting on May 17th it was announced that Queen Alexandra had consented to become patroness of the institution, which, founded in 1913 under the name of the Eastbourne Eye Infirmary, is now known as the Eastbourne Eye Hospital. More suitable premises have been acquired. New patients during the year numbered 703. The year's accounts showed a deficit of £37 10s.

GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

THE summer session of the General Medical Council was opened on May 23rd, under the presidency of Sir DONALD MACALISTER. The session promises to be a long one, as the agenda of importance are numerous. The President commenced his address from the chair by stating that the Dental Board had now been in active operation since the beginning of the year, that its regulations had been duly approved, and that it had decided to erect offices of its own on the site adjoining the building of the General Medical Council. He mentioned also that the vacancy created by the retirement of Mr. Norman Bennett from the Council had been filled by the appointment of Sir Nestor Tirard, for many years secretary of the Pharmacopœia Committee and Medical Editor of the British Pharmacopœia.

Indian Universities.

The President reported in the following words on Dr. Norman Walker's visitation of Indian Universities and Schools of Medicine:—

"This visitation," he said, "was proposed by the late Secretary of State for India, and has been duly carried out by Dr. Norman Walker, accompanied by Colonel R. A. Needham, C.I.E., D.S.O., Deputy Director-General of the Indian Medical Service. His report to the Secretary of State on the present and prospective conditions of obstetric training at the various centres of medical education in India has been duly communicated by Lord Peel to the Executive Committee for its consideration. The report is of great interest and practical importance, and makes recommendations which Lord Peel approves and hopes the Committee will accept. It shows clearly that, after full discussion with the authorities concerned, the Indian Universities are now satisfied that means can and will be found for overcoming such difficulties as may have existed in attaining and maintaining an adequate standard of education in midwifery for the degrees which they desire to be registrable in this country. The particular recommendations on the subject of registration that are made in the report, the Executive Committee has had no difficulty in adopting. In its name, and in that of the whole Council, I venture to offer Dr. Norman Walker our congratulations and thanks for having, at the serious risk of his health, undertaken and carried to a satisfactory conclusion a delicate and important task. From communications which have reached me from India, and from the India Office, it is clear that his tact and judgment, and his sincere desire to promote sound professional education in India, have been warmly appreciated there. He and the colleagues officially associated with his mission have succeeded in bringing about, with the good will of all concerned, a more satisfactory measure of agreement regarding the principles and practice of obstetric instruction than has recently existed between this country and India. For the leading part he has taken in effecting this result Dr. Walker has deserved well of the profession and of the Commonwealth."

The Reform of the Qualifying Examinations.

With regard to the reports on the visitation and inspection of the qualifying examinations in Medicine, Surgery, and Midwifery,[1] the President said that the draft resolutions on the professional examinations, based on the reports by the Examination Committee of the Council, had been submitted for the observations of the Licensing Bodies, that attention had been paid to the criticisms of those bodies, and that during the session a draft would be submitted to the Council for approval, designed to embody the best examination practice, as suggested by the experience of the Council and of the licensing authorities.

"A similar course," he said, "has been followed with regard to the Draft Rules for post-graduate Degrees and Diplomas in Public Health. Though some diversity of opinion exists on certain details of the proposals contained in the new Rules, there appears to be a considerable body of support for the requirement of a longer period of practical study and professional experience from medical practitioners who seek to qualify themselves for responsible administrative office in the Public Health Service. The Standing Committee on the subject has held several meetings for the discussion and preparation of its second Report on the Rules, which will come up for final consideration by the

[1] See THE LANCET, April 29th, pp. 853 and 861.

Council during this week. The Committee and the Council will learn with deep regret of the death, a few days ago, of our much-valued Inspector of Public Health Examinations, Dr. Robert Bruce Low, on whose reports the new Rules have been based.

"With reference to the revision of the curriculum for ordinary medical qualifications, the Education Committee has held more than one special meeting during the recess. It has succeeded in bringing into succinct and orderly form the main recommendations of the many expert sub-committees which were requested to consider the proper content and relations of the successive educational stages of the professional course. Much thought has been given to the sequence and interconnexion of the several subjects of study, and to the relating of all to the preservation of health as well as to the skilled observation and treatment of actual disease.

"The report of the Education Committee will, I understand, put forward a series of resolutions, indicating its view of what the course of professional study for a registrable qualification should comprise in order that it may be deemed by the Council 'sufficient' for the purpose of Section 20 of the Medical Act, 1858. That purpose is 'to secure the possession by persons obtaining such qualification of the requisite knowledge and skill for the efficient practice of their profession.'"

With reference to the revision of the curriculum for ordinary medical qualifications, much thought, the President said, had been given to the matter by the Education Committee, whose report will put forward a series of resolutions the purpose of which is "to secure the possession by the persons obtaining such qualifications of the requisite knowledge and skill for the efficient practice of their profession."

Finance and Other Business.

The President was able to announce a satisfactory financial position, for the surplus income of the General and Branch Councils is £3264, which is more than in any year since 1915, or about twice the average annual surplus for the past seven years. This result is in a measure due to the greater number (1410) of practitioners registered in 1921, as compared with 1100 in 1920. These figures confirm closely the forecasts furnished by the Council to the Government during the years of the war. The number of medical students registered in 1921 is 1808, as compared with 2531 in 1920, and 3420 in 1919. Though the number is still higher than the average (1421) for five years before the war, the relief thus afforded to the overstrained medical schools and colleges cannot but be welcome.

TUESDAY, MAY 23RD.

After the election of the various Standing Committees, the Council proceeded to the consideration of penal cases. Five cases came before the Council, and two names were erased from the Register—viz., Edwin Ernest Willis, convicted of felony at Durham earlier in the year; and Richard William Starkie, convicted of felony at the Central Criminal Court last year.

LITERARY INTELLIGENCE.—Messrs. William Hodge and Co., Ltd., announce for early publication a volume of the Notable British Trials Series, dealing with the trial of George Joseph Smith (the trial popularly known as the "brides in the bath" case), edited by Eric R. Watson, barrister-at-law. —The Oxford University Press announce the forthcoming publication of "Arab Medicine and Surgery: A Study of the Healing Art in Algeria," by M. W. Hilton-Simpson, B.Sc.

BOGNOR WAR MEMORIAL HOSPITAL.—This hospital was opened for patients in July, 1919, its foundation having been largely due to the munificence of Mr. James Fleming, of Aldwick Grange, who gave £2000 towards the purchase of the building and £5000 to inaugurate an endowment fund. The town supplied £2000 to complete the purchase and the furnishing as a war memorial. At the annual meeting on May 17th Mr. Fleming said that the possibility of making an addition to the hospital to provide for paying patients had been under consideration, but the more practicable course seemed to be the erection of a new hospital building, and the disposal of the present one as a nursing home or a maternity hospital. Mr. Fleming said that the question of adding a maternity department to the Bognor Hospital had been negatived. The balance in hand on the year's working was £334 1*s.* 3*d.*, and this despite the increased cost—£1236 0*s.* 10*d.*, against £1121 in 1920.

Correspondence.

"Audi alteram partem."

EARL HAIG'S APPEAL.

To the Editor of THE LANCET.

SIR,—I append a letter which I received upon my return from accompanying the King through the British cemeteries in France and Belgium. It is a call to other parents from one who is worthy of her son, and no words of mine should or could be added to amplify its sincere brevity. I ask you to bring it to the notice of your readers, many of whom I feel sure will desire to add their names to the roll of the Remembrance League.

Granville Park, Blackheath, S.E.

"DEAR EARL HAIG,—Their Majesties have again displayed a great understanding by making a pilgrimage to somewhere in France, somewhere 'which is for ever England.' Day by day as my husband and I read of the simple tributes our King and Queen paid, we felt that they were paying these on our behalf.

That surely must be the feeling in the hearts of a very large number of 'sorrowfully-proud' parents. In order to associate ourselves yet more closely with their pilgrimage, we are sending this small donation to your office (Earl Haig's Appeal, 1, Regent-street, London), believing that our son would wish that our token of rememberance should be coupled with our gratitude towards his comrades, many of whom are suffering poverty in consequence of their war services.

If you think that other parents would wish to associate themselves with the 'Royal Tribute' in this manner, please make use of this letter. OUR PILGRIMAGE."

So speaks a mother of a hero who fell in our defence.

I am, Sir, yours faithfully,

HAIG, F.-M.

A PLEA FOR A STANDARD TEXT-BOOK OF SURGERY FOR EXAMINATION PURPOSES.

To the Editor of THE LANCET.

SIR,—Only a careful comparison of the text-books of surgery, most popular at the present day, will convince surgeons how contradictory are their statements. The quotations given below will show this quite clearly. The result of this disagreement is that in any surgical examination the student may give the answer which he is warranted in giving from the text-book from which he has studied, and yet it may not be the answer which the examiner considers correct. A student who had studied some other text-book would be equally justified in giving some quite different answer which his text-book might teach him was the correct one. It is sometimes said that this does not matter, because a student can always give his authority for any statement he makes, and that if the examiner understands that he has really been taught to regard as correct, what he himself regards as error, he will allow for that. But I do not believe that many of the examiners in surgery in this country realise how diverse are the views expressed in the text-books, and how a candidate may express quite correctly the view he has been taught, and yet the examiner may consider him wrong. In the examination of answers in a written paper, there is, of course, no opportunity of asking a candidate where he obtained information which the examiner does not consider correct. In a viva voce, the candidate may not know that the information he gives is not acceptable to the examiner. I think it is a mistake to conduct an examination as if it were a teaching class. If a candidate makes a wrong statement I think it is better not to correct him, better not even to let him know he has made a wrong statement, or it may discourage him, and prevent him from doing as well as he might otherwise do in answering subsequent questions.

Recognising the fact that at the present time a student will find widely divergent statements in the text-books what can be done to give him a fairer examination test? It seems to me that there should be one recognised text-book of surgery, and that its statements should, for examination purposes, be looked upon as authoritative, and that the candidate should not be expected to know more than the information

it contains, though he must of course show proficiency in practical work, and diagnosis. When a new disease, or form of injury, is described it is sometimes difficult to know whether a student can be expected to know about it. That difficulty would be met if the examiner were guided by whether it was included in the most recent edition of the standard text-book. This book should be published under the direction of a committee of surgeons who are teachers. It would, of course, have to be actually written by one surgeon, but the proofs of each chapter, or section of a chapter, could be submitted to each member of the committee, who would then meet and discuss it, and decide on the final form which it should take. Such a committee could be appointed by the Council of the Royal College of Surgeons of England, and the book could be used as the standard text-book for the ordinary pass examination in surgery by the College and adopted also by any university which chose to do so. This would not limit in any way the teaching of individual views by surgeons which might be accepted by students in preference to any views expressed in the standard text-books, but for examination purposes they would be expected to know what was the generally accepted view. A candidate for one of the higher diplomas or degrees in surgery such as the Fellowship of the Royal College of Surgeons of England or an M.S., would, of course, be required to furnish evidence of a much wider knowledge than could be obtained from the standard text-book, particularly information gained by his own observation and research.

The following examples of divergence of statement are taken from two of the most popular text-books at the present day, Thompson and Miles's text-book (ed. 1915) and Rose and Carless's text-book (ed. 1920), and also from the new text-book by the surgical staff of St. Bartholomew's Hospital—Gask and Wilson's text-book, and from Bowlby's text-book of Surgical Pathology (ed. 1920). In order to economise space these books are referred to by letters only. If more space could be given in the columns of THE LANCET, I could give many more examples.

Nature of Acute Necrosis.—T. and M.: Regard it as essentially an acute osteo-myelitis, starting in the marrow and extending to the periosteum. G. and W.: Said to start either as a periostitis or in the medulla, or as an acute epiphysitis. B.: Described as an acute infective periostitis, secondarily involving the underlying bone and medulla.

Question of Opening up the Medulla in Acute Necrosis.—T. and M.: Advise free opening up the medulla "when there is sufficient evidence suppuration has occurred." It must be presumed this refers to suppuration in the medulla. We are not told what is the evidence. R. and C.: Advise that the medulla be opened up in all cases with pus under the periosteum. G. and W.: The writer advises, as all surgeons do, free incision of the periosteum to evacuate pus beneath, but if pus is present here he does not seem to favour opening the medulla, for he says: "If no pus is found under the periosteum, and if the membrane is hyperæmic and swollen, a linear incision half an inch wide should be cut through the compact bone into the medulla, in order that pus in the medullary cavity should be evacuated."

The Character of Myeloma.—T. and M.: Said to have been known to give rise to secondary growths, but as a rule to be innocent. R. and C.: On page 223 it is stated that they never give rise to secondary deposits, but on page 673 it is said they rarely do so. G and W.: It is said that under no circumstances do they give rise to secondary growths. B.: Still described as myeloid sarcoma, and said to be growths of local or limited malignancy, and to infiltrate the soft tissues around, but never to give rise to secondary growths.

Treatment of Periosteal Sarcoma.—T. and M.: Amputation is not considered necessary in the less malignant forms, and that the outlook after amputation is often hopeless in the more malignant forms, and therefore excision of the portion of bone on which the tumour grows is recommended. R. and C.: Agree with T. and M. that results so bad after amputation that surgeons are now inclined to practise excision of the bone on which the tumour is growing, and the use of X rays and Coley's fluid after. G. and W.: Amputation is advised above the affected bone, but it is admitted that the outlook is very bad and the use of X rays, radium, and Coley's fluid is suggested instead, but excision of the portion of bone is only mentioned in connexion with what the writer calls "parosteal" sarcoma, which is described as a sarcoma growing closely around the bone on the periosteum and invading the muscular attachments, and may involve one muscle almost entirely, being attached to the bone only at the point at which the muscle is attached. Such a form of sarcoma of bone is not described by either of the other three writers.

Causes of the Difficulty in Reducing Dislocation of the Metacarpo-Phalangeal Joint of the Thumb, and its Treatment.—T. and M. say: The consensus of opinion now seems to be that it is not due to the "button-holing" by the short flexor, but to the "interposition of the volar accessory ligament, and the sesamoid bones, between the phalanx and the metacarpal bone," and they say open operation is seldom necessary, and that the accessory volar ligament should be divided subcutaneously with a tenotomy knife. G. and W. say: "The difficulty is usually ascribed to the fact that the head of the metacarpal bone passes forwards between the two heads of the flexor brevis muscle and is embraced by the short muscles of the thumb and their sesamoid bones," and an open operation only is recommended and not a subcutaneous tenotomy, when manipulation fails."

Reason why the Inner Table of the Skull is apt to be more Extensively Fractured than the Outer.—T. and M.: State that "the brittle inelastic character of the inner or 'vitreous' table renders it less able to resist bending than the comparatively open and porous outer table. Hence it is that in almost all fractures of the vault the inner table fractures over a wider area than the outer." R. and C.: Say the reason why the inner table is apt to fracture more extensively than the outer is because it is less supported, having only the soft dura mater and brain below it, just as a nail driven through an unsupported piece of wood causes a ripping up of the under surface. G. and W.: Say the greater liability of the inner table is not due to the supposed greater brittleness of the inner table, but is in obedience to Teevan's law, which states that "when pressure is applied to a body, the fracture commences on the line of extension, not that of compression."

A great many more examples of divergent statements in these text-books could be given if space would allow, and if to these four text-books were added several others the examples would be very numerous indeed.

I am, Sir, yours faithfully,

CHARLES A. MORTON,
Professor of Surgery in the University of Bristol, and Examiner in Surgery in the University of Birmingham.

Clifton, Bristol, May 11th, 1922.

"SCHOOL HYGIENE."

To the Editor of THE LANCET.

SIR,—The Council of the Medical Officers of Schools Association have decided, after careful consideration, to suspend the issue of the journal *School Hygiene* until such time as the cost of printing falls, and, in order that the Members and Associate Members may be provided with the papers read before the Association's meetings and be kept in touch with the subjects of school hygiene, have decided to issue a Year Book at the end of 1922. The Council hope that the suspension of the issue of *School Hygiene*—a journal alone in British journalism devoted to the exposition of the scientific aspects of school hygiene—is only a temporary measure. Its publication made heavy calls upon the financial resources of the Association which even the raised subscription has not been sufficient to counter-balance. The Council are confident that the proposed Year Book will be a worthy successor, for the time being, of *School Hygiene*.

The discussions held during the last two years have been well attended and have aroused the interest of outside associations representative of the teaching profession, and the Association has been able to do good work for school hygiene. A special committee has been occupied in the revision of the code of rules for the prevention of infectious diseases. Its work is nearly completed, and a copy of the revised rules will be issued shortly to Members and Associate Members. The Council trust that the Association will continue to receive the active support of its Members and Associate Members, and be enabled to carry on the work in which it has been occupied since 1884.

I am, Sir, yours faithfully,

G. CHAIKIN, Joint Hon. Secretary.
11, Chandos-street, Cavendish-square, W. 1.

THE PRACTITIONER'S HOLIDAY.

To the Editor of THE LANCET.

SIR,—In the issue of THE LANCET for May 6th, you have a leading article with the above title and in connexion therewith refer to a scheme drawn up by the London Panel Committee for mutual assistance during the holiday season as an alternative to the employment of locum-tenents. You say: "The scheme may still seem something of an experiment: we believe it is an experiment long overdue and one which might have been tried with a large measure of success many years ago."

May I point out that so far as Leicester is concerned we have got beyond the experimental stage in regard to this matter. For three years the medical practitioners in Leicester have had in operation a scheme of collective locum-tenencies during holidays or sickness, and during the six months ended Sept. 30th last, 33 doctors attended patients under the scheme and 18 availed themselves of the facilities afforded. £243 12*s.* were contributed to the pool, and the expenses for printing, stationery, postage, &c., amounted to £7 18*s.*, leaving £235 14*s.* for distribution amongst those who did the work. I enclose herewith a copy of the details of the scheme in operation from April 1st to Sept. 30th, from which you will note that arrangements are made for absences from practice through illness as well as for holidays. We also have a similar scheme in operation for the winter months for sickness and short holidays, the rate of contribution to the pool being £4 4*s.* per week during illness and £8 8*s.* per week for holidays.

The scheme in Leicester has been sufficiently appreciated to become a continuous arrangement, and is in advance of the scheme of the London Panel Committee in so far that it affords facilities for the whole of the year and not for a few months only, and also that it provides for absences due to illness as well as for holidays. A close observer will note that the main principles of the scheme drawn up by the London Panel Committee are identical with those of the Leicester scheme, and also that the decision of the London Panel Committee to put such a scheme into operation follows a publication of the details of the Leicester scheme in December last.

I am, Sir, yours faithfully,

E. LEWIS LILLEY,
Hon. Secretary.

Leicester, May 20th, 1922.

*** Dr. Lilley's enclosures show that the scheme worked out by the Leicester Local Medical and Panel Committees covers all the ground and arranges for systematic holidays for practitioners with the minimum of professional disturbance.—ED. L.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

To the Editor of THE LANCET.

SIR,—We would draw the attention of the profession to a meeting to be held at 1, Wimpole-street, London, W., on Friday, June 9th, at 2.30 P.M., when it will be proposed that a Medical Society for the Study of Venereal Diseases be formed. The number of those specially engaged on work in connexion with venereal diseases is ever increasing, and it is believed that the institution of a society for the study of the subject would supply a widely-felt need. Local divisions of the society will be formed, and meetings will be held, at which subjects of clinical, pathological, and administrative interest will be discussed. It is proposed to publish a journal if and when this is found to be practicable.

The society will doubtless attract medical practitioners engaged particularly in venereal diseases work, laboratory workers, and medical officers of health, but membership will be open to any medical practitioner who may be interested. While it is hoped that as many as possible of those interested will attend the meeting on above date, it will be of assistance if those who contemplate becoming members of the society will communicate their intention now to the interim secretary. The aim of the society, the uniting for the advancement of knowledge and the promotion of the common interests of those engaged in the study of venereal diseases, is one which we would cordially commend to the profession, and we would ask for it the wide measure of support which, in our opinion, it deserves.

We are, Sir, yours faithfully,

HAROLD W. BARBER.	MARY LISTON.
C. H. BROWNING.	C. H. MILLS.
J. C. BUCKLEY.	A. LOUISE MCILROY.
E. T. BURKE.	W. WYNDHAM POWELL.
A. CAMBELL.	HENRY SEMON.
E. R. T. CLARKSON.	ALEXR. MALCOLM SIMPSON.
WILFRID FOX.	KENNETH WALKER.
A. MEARNS FRASER.	DAVID WATSON.
L. W. HARRISON.	ALEXANDER WILSON.
MATTHEW HAY.	FREDERICK P. WILSON.
FRANCIS S. KIDD.	ROBERT FORGAN
DAVID LEES.	(Interim Secretary).

Middle Ward District Offices, 30, Renfield-street, Glasgow, May 20th, 1922.

PNEUMORADIOGRAPHY OF THE KIDNEY REGION.

To the Editor of THE LANCET.

SIR,—In your issue of May 20th there appears an annotation on some experiences of Dr. P. Rosenstein with perirenal inflation. I see no reference to Dr. Carelli, of Buenos Aires, who introduced the method, and gave demonstrations in Berlin, Vienna, and Paris before coming to London, where he described his procedure at the Royal Society of Medicine. The first perirenal inflation to be done in England was carried out in my department at the French Hospital by Carelli himself.

I published a detailed account of his technique at the time, but have since found occasion to modify it in some details. It is not an easy technique. Muscular inflation is not likely to be proceeded with owing to the pain produced, but a pneumothorax, a pneumoperitoneum, or an inflation of the bowel are possible mishaps. I find it desirable to go in a little further from the spine than Carelli recommends, so as just to touch the second lumbar transverse process when the needle is directed slightly inwards. This landmark found, the needle is directed vertically downwards, and introduced 1 cm. deeper than the process. A test is then made with a gas-filled record syringe. If pain is produced, the long platinum needle is further introduced, tests being made every few millimetres. When gas goes in freely, without pain, the perirenal space is probably reached; but manometer readings are hard to get until at least 20–40 c.cm. of gas have been introduced. The inflation is completed with an apparatus similar to that used for artificial pneumothorax.

I have used both oxygen and CO_2, the latter being now recommended by Dr. Carelli. Oxygen may be safer with regard to gas embolism, as claimed by Dr. Rosenstein. As to that I cannot say, but it is my experience that patients can usually walk without discomfort a couple of hours after CO_2, whereas with oxygen there is slight discomfort for some days. This is not of any moment if the patient will keep quiet, and I have not known any serious consequences follow even when he has refused to do so.

On the other hand, *pneumoperitoneum* should not be looked upon too lightly. At first I thought the subsequent complaints—pain, "stitch," &c.—were due to oxygen "hanging about"—as it does for days. But I have since found that they occur to some extent after CO_2 also, which can be shown to vanish within three hours. I conclude that the after-symptoms are due to change of position after the considerable displacement of viscera which occurs. If the patient can be got to bed without having to sit up or exert himself in any way, they are practically absent.—I am, Sir, yours faithfully,

F. HERNAMAN-JOHNSON.

Harley-street, W., May 20th, 1922.

WHY IS SEPTIC AURAL DISCHARGE SO COMMON?

To the Editor of THE LANCET.

SIR,—The letter of Mr. W. Stuart-Low in your issue of May 20th is very interesting. It is agreed that the majority of cases of otitis media are due to the common exanthemata, notably scarlet fever. It is obvious, therefore, that these patients should be suitably treated ab initio and not discharged from fever hospitals with running ears. In 1906, when in charge of the Manchester City Fever Hospital, I called attention to this point in a paper read before the Otological Society,[1] and pointed out the necessity of (*a*) the appointment of a consulting otologist to every large fever hospital, and (*b*) previous training in otological technique on the part of the resident medical officers. The former alone is obviously not sufficient. It is desirable that all cases of otorrhœa should be regularly examined by the medical staff of the hospital in a dark room secundum artem; if this is done, the appropriate treatment can be adopted for each case and carried out when necessary by the surgeon himself. The prevalent practice of ordering discharging ears to be syringed by the nurse without previous *adequate* examination is, in my view, responsible for much chronic otitis, and is to be deprecated. I agree that careful drying of the tympanic cavity with instillation of spirit drops is, as a rule, preferable to syringing, but this cannot be done without skilled technique. I am still as strongly of opinion that no patient should be discharged from a fever hospital with a running ear. This cannot be done unless the staff are skilled in minor otological technique, and apply their skill to the patients under their care.

In a series of 340 cases described in the paper referred to, 287 were cured by intra-tympanic treatment, and the radical mastoid operation was performed in 15·6 per cent. cases, with cessation of the ear discharge in each case.

I am, Sir, yours faithfully,

A. KNYVETT GORDON.

Bedford-square, W.C., May 22nd, 1922.

To the Editor of THE LANCET.

SIR,—Mr. W. Stuart-Low's rather pessimistic letter on the above subject in your issue of May 20th seems to assume woeful ignorance on the part of that humble recluse—the "medical practitioner"—often referred to ignominiously in other quarters as the "G.P." As one of the much maligned latter class, may I be allowed to say a word in defence? One of the doctrines dinned *ad nauseam* into the fourth-year student's ears is the liability of catarrh of the naso-pharynx, to be followed by otitis media, and it is unlikely that the most unretentive of fourth-year students (the precursor of the "M.P.") should forget this, so forcibly is it impressed on his memory. All reasonable beings will agree with Mr. Stuart-Low that paracentesis tympani should be performed at once in cases of otitis media, and I perform the operation whenever I get the chance; but, alas! how often does the "M.P." see the patient—the working-class one at least—before the discharge has been in existence some days? Unfortunately, the working classes have not been educated to realise the importance of the condition. I agree, however, with Mr. Stuart-Low that there has been a great increase in the number of cases of septic aural discharge of late, and think that one of the chief causes has been the wide prevalence of influenza, a large number of cases of which were followed by otitis media—and, incidentally, frontal sinusitis. Unfortunately, many of the cases treated themselves during the stress of the epidemics—even if they had not, I doubt if it would have been humanly possible (for men in large practices at least) to have incised the drum in all cases; and, again, there are some ignorant people who will refuse to have the operation done; it has been my sad lot on at least two occasions to hear the patient say that he "would rather let it take its course."

I can testify to the popularity—even in better-class patients—of the cotton-wool plug, and, like Mr. Stuart-Low, think it and the syringe harmful. I always advise my patients to mop out the discharge and find that the intelligent use of peroxide and per-chloride cleans the ear and leads to healing of the drum in a few weeks in most of the cases. Mr. Stuart-Low states that "many patients . . . ultimately develop . . . brain abscess or septic meningitis." No doubt *some* do; out of a goodly number of cases of otitis media seen in the last four and a half years I have not seen a case of either abscess or meningitis, and am sure I have not missed any. It may be good fortune. The only case of mastoid abscess that I have had to operate on was a baby, aged 18 months, in whom neither enlarged tonsils nor adenoids were present. With reference to the removal of the latter—every observant "M.P." is familiar with the large number of cases of enlarged tonsils (I exclude the large number of cases of so-called enlarged tonsils, examined by the school doctors when in a state of "cold") that get better without an operation. I have seen scores of patients where operation—advised by myself—has been postponed on account of the busy times of the influenza epidemics, of refusal by the parents, or on account of the patient catching some infectious disease; and I have been surprised to see the normal state of the tonsils months afterwards. With adenoids, however, the case is different, and I always insist on operation in these cases.

If Mr. Stuart-Low were familiar with the conditions under which the "lower classes" lived—the dirt, overcrowding, lack of bed space with pillows at both ends (I am afraid that sleeping transversely to allow of more room is not unheard of!), and the lack of ventilation in the hovels designated houses, he might have chosen as his title, "Why is Septic Aural Discharge so Uncommon?"

I am, Sir, yours faithfully,

AMBROSE W. OWEN,
Hon. Surgeon, Aberdare General Hospital.

Aberdare, May 24th, 1922.

HOSPITAL LIGHTING.

To the Editor of THE LANCET.

SIR,—The abridged report of my address in your issue of May 6th (p. 925) lacks sequence by the necessary omission of certain explanations. The following general remarks may, I think, usefully supplement the restricted report.

In any installation the lighting should be carefully adapted to the capacities and limitations of the human eye, but in a hospital ward, where the sick are more sensitive to ill-devised lighting and more helpless under it, special consideration is needed. Unfortunately, glare on the one hand and insufficient lighting on the other exists in many of our hospital wards; and yet it is so easily avoidable. Then again, the ceilings and walls of the wards should not be glossy, for they mirror with a painful dazzle all the lights, even those that might otherwise be screened. They may have a matt or dead finish and yet be quite washable. While the ceilings should be white the walls are better darker. There is a sense of pleasure and even a healing effect in a scheme of quiet well-chosen colours. The dado may, however, safely be glazed or even tiled.

Whatever the nature of the illuminant used generally in the hospital, there is but one choice for the operating room or theatre—electricity. The colour of the light should be as white as possible and sufficiently abundant to give not less than 20 or 25 foot-candles[1] on the table. It should be thoroughly diffused, for easier and

[1] Journal of Laryngology, Rhinology and Otology, vol. xxi., No. 6, June, 1906.

[1] A foot-candle is the illumination received from one standard candle at a distance of 1 foot. The total illumination at any point is the candle power divided by the square of its distance. Thus a 100 c.p. lamp 5 feet above a table gives $100/5^2 = 4$ foot-candles.

better vision is thereby obtained with the same or even less intensity. Operating lamps are commonly placed directly over the table, which, besides throwing the shadow of the surgeon's head on the work, often give an intolerable heat on his head. The light is better when arriving obliquely from several points, but not so as to destroy the gentle shadows that give form and recognition to the objects sought. I pointed out that for daylight work, the most desirable form of roof was one giving the greatest expanse of skylight; one can get on the table a zenith and northern angle of 115° and still leave plenty of room to clear the summer sunlight. Where such a roof is employed the most excellent and aseptic plan is artificially to light the room from the outside with four or more powerful units. There will be no need for any fittings or the intrusion of any workmen inside.

The decoration of the operating room ceilings and upper walls should be of white enamel for the sake of diffusion of light, but the dado, not less than 5 feet high, should be a darker restful colour—say, a neutral green; it would detract little or nothing from the light on the table and be a boon to tired eyes.

Operating rooms with flat ordinary ceilings would be well served by high power indirect lighting; or, with less diffusion, by direct lighting if kept up to ceiling level. Each unit should have a glass cover to prevent the accumulation of dust.

I am, Sir, yours faithfully,

JOHN DARCH.

West Side, Wandsworth Common, S.W., May 11th, 1922.

THE NUBILE AGE.

To the Editor of THE LANCET.

SIR,—I have been interested in reading the editorial article on this subject in THE LANCET of May 6th. The point appears to me to be missed that the age of marriage being legally lower than "the age of consent" is in practice a provision for the prevention of bastardy. Some years ago I came across a case of a married child who, it appeared, had been the victim of a rape; when her parents coerced the assailant, a labourer, into marrying her so that the stigma of illegitimacy was not attached to the child which she bore when 14 years of age. Her parents retained their daughter in their own home, and took no further interest in the husband except to express the hope that he would be dead before their daughter grew up. What happened once can happen again; and from this point of view the law is perhaps not quite so outrageous as it might appear to be on first consideration. For obvious reasons, I remain,

Yours anonymously,

May 18th, 1922. M.D.

UREA-CONCENTRATION TEST.

To the Editor of THE LANCET.

SIR,—In your issue of May 20th Mr. Frank Kidd still appears to deny that the urea-concentration test was introduced by us. In alleged proof of this contention he brings forward certain quotations, which show quite conclusively that Mr. Kidd does not understand the essential difference between our test and that used by Albarran and McCaskey. This essential difference lies in the fact that while we aim at eliciting a maximum concentration of urea, McCaskey is only interested in the amount of urea passed, and by administering fluids to facilitate excretion puts his patient under conditions which are unsuitable for the attainment of a high urea concentration in the urine. Under these circumstances further discussion on our part would be futile. To those of your readers who take an interest in the physiology of renal secretion Mr. Kidd's letter will of itself show that our test has nothing whatever to do with the older one he describes. His letter is not very easy to follow, chiefly on account of the difficulty already mentioned; and much of it is taken up in discussing the relative merits of the two tests. In one place he seems to say that both tests are the same; later he devotes considerable space to showing the difference between them. We cannot accept Mr. Kidd's opinion as to the value of the McCaskey test over our own, as we prefer to rely on definite experimental results.

Finally, we wish to state that our test, as far as we know, is an entirely new one, and to reaffirm the statement to which Mr. Kidd seems to take objection, that "the urea-concentration test was recently introduced by MacLean and de Wesselow."

We are, Sir, yours faithfully,

H. MACLEAN.
O. L. V. DE WESSELOW.

Clinical Medical Unit, St. Thomas's Hospital Medical School, S.E., May 22nd, 1922.

"CARDIOSPASM" OR "ACHALASIA OF THE CARDIA."

To the Editor of THE LANCET.

SIR,—In 1895 Sir Humphry Rolleston suggested that the condition then known as idiopathic dilatation of the œsophagus was caused by "a failure in the coördinating mechanism by which the cardiac sphincter is relaxed during swallowing."[1] The theory originally proposed by Mikulicz, in 1882, that a spasm of the cardia was the cause of the obstruction in this condition was still, however, generally accepted until 1915, when I independently came to a similar conclusion to Rolleston, and suggested that the name "cardiospasm" should be replaced by "achalasia of the cardia"[2] to indicate that the normal relaxation of the sphincter on the arrival of each peristaltic wave does not occur (α, not; χαλάω, I relax).

Spasm lasting for many years would eventually lead to hypertrophy of the cardia, but post mortem the normal thickness of the cardia is in striking contrast to the hypertrophied muscular coat of the dilated œsophagus. Spasm of the anal sphincter offers powerful opposition to the introduction of the finger, and if the finger once passes through it is tightly gripped. The same phenomena occur in attempting to pass a catheter when spasm exists at the neck of the bladder. But a rubber tube filled with mercury is sufficiently heavy to open the unrelaxed but not spasmodically contracted cardia, and no resistance is felt as it drops through, nor is it gripped when removed.

In view of these facts I regret that Dr. Laughton Scott should spoil his otherwise valuable contribution on the subject in your issue of May 20th by retaining the old name of cardiospasm and neglecting the recent work, which seems to have proved conclusively that achalasia and not spasm is the cause of the condition. I should like to add that, in my experience, the passage of a wide tube filled with mercury is in most cases as successful a method of dealing with the condition as that described by Dr. Scott, and has the advantage of being quite painless and requiring no elaborate apparatus.

I am, Sir, yours faithfully,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest, Berks, May 22nd, 1922.

[1] H. D. Rolleston: Trans. Path. Soc., xlvii., 37, 1896.
[2] A. F. Hurst: Quart. Jour. Med., viii., 300, 1915.

NATIONAL COUNCIL FOR THE UNMARRIED MOTHER AND HER CHILD.—The annual meeting of the Council will be held at Carnegie House, 117, Piccadilly, London, W. 1, on June 28th, at 2.30 P.M. The primary objects of the Council, which was formed in 1918, are: 1. To obtain reform of the existing Bastardy Acts and Affiliation Acts. 2. To secure the provision of adequate accommodation to meet the varying needs of mothers and babies throughout the country, with the special aim of keeping mother and child together. 3. To deal with individual inquiries from, or on behalf of, unmarried mothers. The financial position of the Council is very unsatisfactory and donations are solicited to enable it to carry on the work.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, MAY 17TH.

The Housing Shortage and National Health.

Mr. TREVELYAN THOMSON asked the Minister of Health whether his attention had been drawn to a recent statement by His Honour Judge Parry that anyone who spent a morning in an urban county court knew that the house shortage was causing untold moral and physical ill-being; and, in view of the Government's pronouncement that they only contemplated a temporary check on their building programme until prices fell, would he now authorise local authorities in congested and overcrowded areas to build more houses, seeing that building costs were now down over 100 per cent.—Sir A. MOND replied: My attention has not previously been drawn to the statement referred to. As regards further Government housing, I can add nothing to the replies already given to the hon. Member on the subject, but, as I stated recently, I shall be happy to entertain proposals from local authorities to build outside the State-assisted scheme.

Mr. TREVELYAN THOMSON asked the Minister of Health whether, in view of the conflicting statements made as to the shortage of housing accommodation, he would ascertain from local authorities the number of new houses they still required to prevent the excessive overcrowding at present existing in most industrial areas, and which, according to all medical officers of health, was prejudicial to the preservation of good health and morals.—Sir A. MOND replied: I have given careful consideration to this suggestion, but I do not think there would be any advantage in obtaining a special return at the present time.

Control of Sale of Calf Lymph Vaccine.

Dr. M'DONALD asked the Minister of Health if he would consider the advisability of preventing the sale of calf lymph vaccine by any person unless in possession of a Government licence.—Sir A. MOND replied: The general question of the control of certain therapeutic substances, including the vaccine referred to, was considered by a Departmental Committee appointed by my predecessor, but the carrying out of their recommendations would involve additional expenditure which I am not prepared to recommend at the present time.

Amalgamation of Medical Services in Navy, Army, and Air Force.

Mr. L'ESTRANGE MALONE asked the Prime Minister what were the terms of reference of the committee, presided over by the Minister of Health, which was considering the question of amalgamating certain common services, such as the medical, accountant, audit, and chaplain branches of the three fighting services; what was the constitution of the committee; and was the committee in a position to recommend the creation of a Ministry of Defence should it appear to them to be desirable.—Mr. CHAMBERLAIN (Lord Privy Seal) replied: The terms of reference of the committee are as follows:—"That a technical committee should be set up at once to make definite proposals for the amalgamation, or, if this appeared impossible or undesirable, for the coördination, so far as possible, of the common services of the Navy, Army, and Air Force, such as intelligence, supply, transport, education, medical, chaplains and any other overlapping departments in order to reduce the cost of the present triplication. The Chairman (the Minister of Health) should consider each branch separately and submit interim reports to the Cabinet as soon as possible." A separate committee will investigate the practicability of a Ministry of Defence.

Deaths from Starvation.

Mr. ROBERT RICHARDSON asked the Minister of Health (1) the names of the counties and unions where 28 persons, after an inquest, were declared to have died from starvation or privation in the year 1920; (2) the age and sex, specifying in what unions they died, of the four persons who were found upon an inquest to have died from starvation or privation in London; and (3) whether he would obtain a report on the deaths caused by starvation or privation in 1920 in Durham county from the coroners as well as from the Poor-law inspector; the ages and sex of the deceased persons, and the name of the unions where they died; whether he had received information that the number of such deaths were four in London and 28 in the provinces from inquiries made from all the coroners in England and Wales; and, if not, whether he would make inquiries from all coroners who had not been asked so as to ensure that the total numbers were given correctly.—Sir A. MOND replied: The counties and unions in which these deaths occurred were as follows: Cumberland (Cockermouth); Denbigh (Wrexham); Devonshire (Tavistock); Durham (South Shields, Sunderland, Durham, Easington, 2); Glamorgan (Bridgend and Cowbridge); Huntingdon (St. Ives); Kent (Eastry, Sheppey); Lancashire (Ashton-under-Lyne, West Derby, Ormskirk, Chorley, Burnley); Leicester, Billesdon); London (Kingston-on-Thames, Reigate, Lambeth, Whitechapel); Merioneth (Corwen); Middlesex (Hendon); Norfolk (King's Lynn); Oxfordshire (Bicester); Shropshire (Madeley); Somerset (Long Ashton); Southampton (Petersfield); Staffordshire (Burton-on-Trent); Suffolk (Newmarket); Yorkshire, West Riding (Wharfedale). The sex and age of the four cases in the county of London are as follows:—Female, aged 45–50 years; three males, aged 40, 44, and 60 years respectively. The sex and age of the five cases in the county of Durham, with the names of the unions, are as follows:—Males, aged 54 years (South Shields), 70 years (Sunderland), 73 years (Durham), 5 months (Easington), and 47 years (Easington). All coroners' verdicts are registered by the Registrar of Births and Deaths, and there is no necessity to inquire of coroners as to whether these figures are complete.

The special report made at the hon. Member's request into the Durham cases gives the following further particulars:—

J. M., aged 54, a dock labourer, on Feb. 6th, 1921, at 120, Maxwell-street, South Shields. Verdict, found dead in his bed; heart failure, want of food and all necessaries of life and medical aid.—An unknown man, aged, 70 on Feb. 7th, at Roker Beach, Sunderland. Verdict, starvation and exposure to wet and cold.—R. R., aged 73, a retired coal-miner, on Sept. 4th, in a field adjoining Tudhoe Village, Spennymoor. Verdict, senile decay and exposure through sleeping out.—W. H. R., aged 5 months, son of a hawker, on May 21st, at Wingate. Verdict, exposure to the night air due to natural causes.—J. E. A., aged 47, a coal-miner, on August 22nd, at Wingate. Verdict, exposure, having probably mistaken his way in the dark and fallen down and being unable to get up again.

In the course of his inquiries the general inspector communicated with the coroners for the county, and extracts from the replies received from four of these gentlemen are appended:—

"My experience has been that the deaths from exposure have not resulted from any neglect on the part of the Poor-law authorities. A tramp moving from one institution to another is taken ill or has become belated, and takes a rest, is the general cause of death in these cases. Drunkenness is responsible in other cases."

"In my experience I have always found the Poor-law authorities, without exception, considerate and sympathetic in the performance of their duties, and there is no possible ground to reflect on them in these three cases."

"In none of these cases, however, was any reflection or blame cast upon the Poor-law administration, and I may add that in my experience with cases where Poor-law administration has been concerned no blame has ever been attached to them, and I have always found the officials most ready and willing to give every assistance and information that I required."

"In none of these cases was there, or could there be, any complaint against the Poor-law system or its officers."

Mr. HODGE asked the Minister of Health the number of deaths in Lancashire, upon inquest, which have been occasioned by starvation or accelerated by privation during the years 1919, 1920, and 1921; and the ages and sex of such deceased persons and the unions in which they died.—Sir A. MOND replied: The numbers for which the right hon. Member asks are, as regards the year 1919, two. Both cases were women, aged about 81 and 55 respectively, and they died in the West Derby and the Blackburn Unions. The figures for 1920 are five. All were males, aged 66, 68, 62, 76, and 28, and they died in the Ashton-under-Lyne, West Derby, Ormskirk, Chorley, and Burnley Unions respectively. I regret that the figures for 1921 are not yet available.

THURSDAY, MAY 18TH.

Danger of Unprotected Fires.

Mr. ORMSBY-GORE asked the Secretary of State for the Home Department whether, in view of the fact that between 1500 and 1600 deaths of children occurred every year in Great Britain as a result of being left alone in rooms with unprotected fires, he would introduce legislation to strengthen Section 15 of the Children Act, 1908, with a view to compelling householders having children under 7 years of age to provide a fireguard in the case of fires in rooms frequented by such children.—Mr. SHORTT replied: I cannot accept the figures named in the question, but there is undoubtedly a considerable death-rate among children from this cause. The risk is not one which can easily be dealt with by legislation, and I cannot promise to introduce legislation specially for the purpose, but the question whether any amendment of Section 15 of the Children Act, 1908, can be proposed will be carefully considered when an opportunity for reviewing that Act arises.

The Illicit Drug Traffic.

Mr. RAMSDEN asked the Secretary of State for the Home Department the names of those drugs in respect of whose

illicit traffic convictions had been secured within the last six months; and the country of origin of any of them and the number of convictions, and the proportion of aliens, coloured folk, and English engaged in this traffic.—Mr. SHORTT replied: Convictions have been obtained in respect of raw opium, prepared opium, morphine, heroin, and cocaine. I am afraid I cannot give the hon. Member the other particulars asked for, but I am sending him a summary of the returns which were obtained recently from the police authorities of the convictions obtained under the Dangerous Drugs Act in 1921, which may give him some of the information he desires.

Mr. RAMSDEN asked the Secretary of State for the Home Department whether he was aware that the Advisory Committee on Traffic in Opium had reported to the Council of the League of Nations that, in spite of the activity of the police and the heavy penalties imposed, the traffic in drugs in Western Europe was extremely difficult to check, while it had so far proved impossible to discover the means by which the drugs were obtained or the persons by whom the traffic was organised; and whether, under these circumstances, he would consider increasing the penalties on all convicted traffickers, and, if necessary, introduce legislation for the purpose of inflicting the punishment of flogging.—Mr. SHORTT replied: As stated in my reply to the question put by Colonel Burn on May 9th, the question of strengthening the present Act is under consideration.

Criminal Law Amendment Bill.

Mr. TREVELYAN THOMSON asked the Prime Minister whether the Government proposed this session to pass a Bill amending the present Criminal Law Acts.—Mr. CHAMBERLAIN replied: The answer is in the affirmative.

FRIDAY, MAY 19TH.

Panel Practitioners' Remuneration.

Mr. ALFRED T. DAVIES asked the Minister of Health whether, seeing that the Government entered into an agreement with doctors serving in connexion with National Health Insurance in 1921, that their remuneration was fixed for a period of two years ending December, 1923, at 9*s.* per insured person per annum, making the total cost of medical benefit 12*s.* per insured person per annum, that the Minister undertook then that the difference of 2*s.* 6*d.* between the sum provided by approved societies and the total cost of medical benefit would be met as theretofore by Exchequer grant, and that it was now proposed to transfer that liability of the Exchequer to the approved societies, he would state the reasons for taking this course.—Sir A. MOND replied: The undertaking to which the hon. Member refers was that no reduction in the remuneration of insurance practitioners should be made during the period in question. No undertaking was either given or asked for as to the source from which the additional 2*s.* 6*d.* would be provided. The Committee on National Expenditure recommended that the Exchequer should be relieved of any charge on this account beyond the statutory two-ninths, the liability being transferred to National Health Insurance funds, and the method of securing this result embodied in the Bill before Parliament was suggested by the Ministry of Health Approved Societies Consultative Council.

MONDAY, MAY 22ND.

Dangerous Drugs Act Licences.

Mr. HINDS asked the Secretary of State for the Home Department what was the number of licences that had been issued under the Dangerous Drugs Act, 1920, to agriculturists who occasionally administer such medicines as veterinary chlorodyne and tincture of opium to an animal; and what fees had been paid for such licences.—Sir J. BAIRD replied: Licences under the Dangerous Drugs Act have not been issued to agriculturists, but under an Order of last August farmers and stock-owners in certain circumstances can obtain a certificate from the chief officer of police which enables them to obtain tincture of opium for use in the treatment of animals. No fee is chargeable for the certificate.

Telephone Installation Delays.

Captain REGINALD TERRELL asked the Postmaster-General whether there was now any difficulty in dealing promptly with applications for the installation of telephones in private houses, on account of scarcity of materials or other causes; and whether his attention had been called to recent complaints of applications of five or six years' standing that had not been dealt with.—Mr. KELLAWAY replied: There is now no scarcity of materials and generally no difficulty is found in dealing promptly with applications for telephone service; but there are still a few localities where from various causes it has not been possible yet to complete the cables which are necessary in order to meet the demands for telephone service. I shall be happy to investigate any case that is brought to my notice of an application which has been outstanding for a considerable time.

TUESDAY, MAY 23RD.

Strychnine Poisoning.

Major BARNETT asked the Secretary of State for the Home Department whether his attention had been drawn to a case of strychnine poisoning by misadventure in which one of His Majesty's judges suggested that mistakes of this kind could be obviated if it was enacted that all poisons should be of definite and distinctive colours; and, if so, whether he would consider the desirability of issuing regulations under the Poisons Act or otherwise to carry the suggestion into effect.—Mr. SHORTT replied: I am advised that the regulations for the keeping of poisons direct them to be "kept in a room or cupboard set apart" for the purpose, and that the observance of this rule should in ordinary circumstances render such occurrence impossible. Inquiries are being made of the Pharmaceutical Society as to the practicability of employing definite and distinctive colours for poisons, and if a favourable report is received the possibility of making new regulations under the Poisons and Pharmacy Acts will be considered.

Ministry of Health Outdoor Staff.

Captain ELLIOT asked the Secretary to the Treasury whether the revised regrading of the outdoor staff of the Ministry of Health gave the same proportion of higher to lower posts for men and women; and, if the proportion was fixed with strict regard to the requirements of the work, what was the cause of the differentiation seeing that the men and women were engaged on the same work.—Sir A. MOND replied: The answer to the first part of the question is in the negative. The general position is that women inspectors are engaged to inspect trades where women are mainly employed and in inquiries as to the benefits of insured women. The proportion of higher to lower posts is fixed with reference to the requirements of the work, which is more limited in scope than that of the men inspectors. The proportion is rather more favourable in the case of the women.

Adoption of Children.

Mr. REGINALD NICHOLSON presented a Bill to make further provision for the adoption of children by suitable persons, which was read a first time.

The Services.

ROYAL ARMY MEDICAL CORPS.

Maj. N. D. Walker relinquishes the temp. rank of Lt.-Col.

Temp. Capt. J. Graham relinquishes the actg. rank of Maj.

Lt.-Col. J. Cowan and Maj. A. E. G. Fraser are placed on the half-pay list on account of ill-health.

The undermentioned relinquish their commns.: Temp. Majs. E. M. J. O'Farrell and C. A. Davies (retain the rank of Maj.).

Temp. Capt. H. H. Hulbert (retains the rank of Capt.).

Temp. Lts. W. E. Barnes and C. A. Lindup (retain the rank of Lt.).

TERRITORIAL ARMY.

Maj. J. V. Holmes (late R.A.M.C.) to be Capt. and relinquishes the rank of Maj.

Capt. S. Scott resigns his commn. and is granted the rank of Maj.

Capt. C. T. Fox resigns his commn. and is granted the rank of Capt.

The undermentioned relinquish their commns. and retain their rank, except where otherwise stated: Maj. F. W. K. Tough, Capts. A. W. Berry, W. N. P. Williams, J. St. G. Wilson, W. F. Young (granted the rank of Maj.), F. W. Schofield, R. P. Pollard (granted rank of Maj.), and F. H. Robbins (granted the rank of Maj.).

Capts. A. C. Ransford and J. N. Robins, having attained the age limit, are retired and retain the rank of Capt.

TERRITORIAL ARMY RESERVE.

Capt. F. J. Taplin, from 63rd Lond. Bde., to be Lieut.-Col.

ROYAL AIR FORCE.

J. M. A. Costello is granted a short service commn. as a Flight Lt.

J. H. Wood is granted a temporary commn. as a Flight-Lt.

The undermentioned Flight Lts. relinquish their temporary commns. on ceasing to be employed, and are permitted to retain the rank of Capt.: E. R. Bastard and W. F. Sheil.

Medical News.

UNIVERSITY OF LONDON.—The Bucknill scholarship, of the value of 135 guineas, and two entrance exhibitions, of the value of 55 guineas each, tenable in the Faculty of Medical Sciences, at University College, Gower-street, London, will be awarded on the results of an examination beginning on June 27th. Entry forms, which can be obtained from the Secretary of University College, must be sent in not later than June 6th.

UNIVERSITY OF DUBLIN.—The Board of Trinity College has appointed Sir William Taylor, K.B.E., C.B., to the Regius Professorship of Surgery in the University of Dublin, rendered vacant by the death of Prof. E. H. Taylor. Sir William Taylor is a graduate in arts and medicine of Dublin University, and a Fellow of the Royal College of Surgeons in Ireland, of which he was President from 1916 to 1918. During the war he was consulting surgeon in Ireland with the rank of colonel, and he organised the Dublin (83rd) General Hospital for service in France, serving with it himself in 1917 and 1918. He has been for many years one of the surgeons to the Meath Hospital.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At the meeting of the College held on May 19th Sir David Wallace, C.M.G., President, in the chair, Lieut.-Colonel Sir Joseph Fayrer, Bart., on behalf of the officers of the 2nd Scottish General Hospital, presented to the College a silver bowl as a memento and a permanent record of the services rendered by its Fellows during the great war.—At the same meeting the 16 successful candidates out of 47 entered, who passed the requisite examinations between Jan. 9th and 13th, 1922, were admitted Fellows. The following are the names and medical schools :—

Henry N. Bethune, Toronto; Ralph B. Boston and Edward D. D. Dickson, Edinburgh; May E. Glancey, Bombay and Edinburgh; Laurence W. Innes and David A. Laird, Edinburgh; Shu Fan Lee, Hong-Kong and Edinburgh; Douglas A. Miller, Edinburgh; Koyikal Padmanabhan Raman Pillai, Madras; Stephen H. Pugh, Edinburgh; Thomas H. Richmond, Glasgow; Bolar Thangamma, Madras and Edinburgh; Eric Watson-Williams, London and Cambridge; Laurence A. Wilson, Adelaide; Owen Wilson, Belfast; and James Matthew Wishart, Edinburgh.

The Bathgate Memorial Prize, consisting of bronze medal and microscope, was awarded, after a competitive examination in materia medica, to Mrs. Grace Laubscher, Edinburgh; and the Ivison Macadam Memorial Prize in Chemistry, consisting of bronze medal and set of books, was awarded, after competitive examination, to Mr. Douglas B. Cruickshank, Edinburgh.

FEDERATION OF MEDICAL AND ALLIED SERVICES.—The annual dinner of the Federation will take place, as was announced last week, on June 7th, at the Café Royal, London, when Sir Berkeley Moynihan will preside, and Sir Alfred Mond, Lord Islington, and Dr. Christopher Addison will be present. Members of the Federation wishing to attend the dinner should apply for tickets for themselves and their guests to the Medical Director of the Federation, 12, Stratford-place, London, W.1. The price of the ticket is 10*s.* 6*d.*

ROYAL SANITARY INSTITUTE.—The thirty-third Congress will take place at Bournemouth from July 24th to 29th, under the presidency of Major-General J. E. B. Seely, M.P. The inaugural meeting will be held in the town hall on July 24th at 5 P.M. Sections will be devoted to the following subjects. Sanitary Science; Engineering and Architecture; Maternity and Child Welfare, including School Hygiene; Personal and Domestic Hygiene; and Industrial Hygiene. There will be conferences of the following public health workers—medical officers of health, engineers and surveyors to county and sanitary authorities, veterinary inspectors, sanitary inspectors, and health visitors. The sectional and general meetings and conferences will be held in the Municipal College.

An exhibition of apparatus and appliances relating to health and for domestic use will be held in the Hants Drill Hall. Many representatives of public health bodies are expected, including the Lord Mayor of London and the Lady Mayoress, who are taking an active part in the meeting. Fellows, Members, and Associates of the Institute are supplied with tickets (£1 11*s.* 6*d.* each) for the Congress on application to the secretary at the offices of the Institute, 90, Buckingham Palace-road, S.W.1. Tickets for those not connected with the Institute may be obtained up to July 21st at the offices of the Institute, or at the offices of the local secretaries at the Town Hall, Bournemouth, and on the following days at the Reception Room in the Municipal College. Ladies' tickets (not including copies of the proceedings), 10*s.* 6*d.* each. Lists of hotel and boarding-house accommodation may also be obtained on application to the secretaries.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL.—The following scholarships and prizes have been awarded for 1922: Peacock Scholarship, M. W. P. Hudson; Grainger Testimonial Prize, D. A. Davies; Hadden Prize, C. V. Patrick and C. P. R. Gibson, equal; Mead Medal and Toller Prize, J. F. Hackwood; Cheselden Medal, C. V. Patrick.

THE annual general meeting of the Lebanon Hospital for Mental Diseases (Asfuriyeh, near Beyrout, Syria) will be held at the rooms of the Royal Society of Medicine, London, on Thursday next, June 1st, at 4 P.M. Further particulars may be obtained from the secretary at 35, Queen Victoria-street, E.C. 4.

SUMMONS FOR FEES UNDER MIDWIVES ACT.—The Lancashire County Council summoned two men to recover from each the sum of £2 2*s.*, the fee paid by the council to the doctor called in by a midwife to assist in their wives' confinements. The case was brought under the Midwives Act of 1918, which provides that in a case of emergency a midwife was bound to call in a medical practitioner, whose fee should be paid by the supervising authority—in this case the council, who were authorised to recover the money from the husband or other responsible person. It was stated that it is very unusual for the fee not to be paid by the husband, and it was also mentioned that when the husband was earning less than a certain sum the council did not seek to obtain repayment of the fee. In each case an order for repayment was made.

MEDICAL DEPARTMENT OF THE ROYAL NAVY.—The Gold Medal founded by the late Sir Gilbert Blane, to be given biennially, has been awarded by the Director-General of the Medical Department of the Navy and the Presidents of the Royal College of Physicians and the Royal College of Surgeons to Surgeon-Commander Sidney W. Grimwade, who obtained a first-class certificate at the examination held in February, 1922, for promotion to the rank of Surgeon-Commander. Three Blane Medals, which remained unadjudged owing to the absence of promotion examinations during the war, have been awarded to Surg.-Commdr. Reginald St. G. S. Bond, Surg.-Commdr. Robert W. B. Hall, and Surg.-Commdr. Sheldon F. Dudley, for distinguished professional zeal and ability displayed throughout their Service career.

MANCHESTER UNIVERSITY COURT.—At the meeting of the Court of Governors of the University of Manchester held on May 17th the Vice-Chancellor reported that there are at present 2859 students at the University, of whom 729 are in the Faculty of Medicine, and 452 in the Faculty of Technology. Of the total number, 733 were women, including 150 in the Faculty of Medicine. The Appeal Fund has now reached £250,442, only half of what it had been hoped to obtain. Owing to the increased number of students there was a certain amount of overcrowding, and in the medical school practical classes had to be duplicated in the third, fourth, and fifth years. There had been welcome increases in contributions from the City Council, from the Lancashire and Cheshire County Councils, and from adjacent towns. Dr. Charles Slater contributed £1000 towards a fellowship in preventive medicine in memory of Prof. S. Delépine, and the executors of the late Mr. Herman Wooley £1000 towards a lectureship in pharmaceutics.

THE FUTURE OF PUBLIC HEALTH SERVICE.—At a gathering of district medical officers of heal that Stafford, at which a presentation of a gold watch was made to him on his retirement from the position of county medical officer of health for Staffordshire, Dr. George Reid expressed the belief that sooner or later there would be a reconstruction of areas, with decentralisation, and assumption by big local councils of the work now performed by the central body in London. He did not know when housing would improve; conditions at the present time were very bad, and it was shocking to find in large numbers of families adults of both sexes occupying the same bedrooms. With regard to milk-supply, an alteration ought to come without resort to the grading of milk—a step admitting that we might have dirty milk, graded according to the price paid for it. Tuberculosis in cattle could be abolished and milk delivered pure without any unreasonable expense. The absolute necessity for efficient inspection of cattle, and the uselessness of appointing local veterinary practitioners as inspectors under the Act, had been pointed out to the Government. He endeavoured many years ago to prevent that happening in Staffordshire, but the farmers were much too strong for him; the provisions of the Meat Bill merely developed into a machine for compensating farmers for dying animals. This state of things could be prevented by having an unbiased whole-time service. On the same occasion a cordial welcome was extended to Dr. Reid's successor, Dr. W. D. Carruthers. Dr. Reid has been appointed consulting medical officer by the Staffordshire County Council.

THE following members of the Registered Nurses Society, who were requisitioned from London by the Queen of the Hellenes to nurse sick and wounded Greek soldiers during the war in Anatolia have been recommended by the Commander-in-Chief of the Greek army in Asia Minor for the Silver Cross of the Knights of the Royal Order of the Redeemer: Sister Catharine Ann Evans, Sister P. M. Oakley-Williams, Sister Gladys Brown, and Sister Christina Jane Baxter. The honour is officially styled a "moral reward for admirable self-denial, indefatigable zeal, and exemplary devotion for our wounded soldiers."

MEASLES IN MANCHESTER.—During the week ending May 13th 726 cases and 16 deaths from measles were reported, so that the malady has taken an almost epidemic form. In the previous week there were 438 cases and 11 deaths. With one exception the districts concerned are contiguous. The schools will not close, but every notified case will be visited, and the appointed visitors are to point out the necessary precautions. It has been found necessary to open a special measles ward at the Monsall Fever Hospital, and six additional health visitors have been appointed.

ROYAL PORTSMOUTH HOSPITAL.—The ceremony of opening the War Memorial Gateway at the Royal Portsmouth Hospital, postponed from April 28th, was performed on May 19th by Princess Helena Victoria. The gateway brings into greater prominence the hospital buildings, which previously were completely hidden from the main thoroughfare of the town. Following the presentation of purses, the Princess inspected the extensions and improvements made to the hospital during recent months, which form a part of the memorial. For these purposes a sum of £10,000 was allocated from the local War Memorial Fund, and £750 was received from the British Red Cross Society.

UNIVERSITY OF ABERDEEN: STUDENTS' GALA WEEK.—As the result of the gala week held recently by Aberdeen University students, on behalf of the Royal Infirmary and other hospitals, the sum of £4088 14*s.* 3*d.* will be available for distribution. £1266 2*s.* in all was collected, while the expenditure amounted to only £177 7*s.* 9*d.* During the "hold up" in Union-street and adjoining thoroughfares on the Friday, £938 17*s.* 7*d.* was collected, and at the torchlight procession in the evening, £310 15*s.* The house-to-house, theatre, and cinema collections brought in £508 5*s.*, while in their excursions into the country districts the students gathered £1037 8*s.* 8*d.*

ROYAL MEDICAL BENEVOLENT FUND.—At the meeting of the committee held at 11, Chandos-street, Cavendish-street, W. 1, on May 9th, 25 cases were considered and £374 voted to applicants. The following is a summary of some of the cases relieved:—

Daughter, aged 55, of M.R.C.S. Eng. who practised in London and Birmingham and died in 1890. She is a trained nurse and has been working for over 30 years, but has had to give up owing to rheumatoid arthritis. Applicant has spent her savings on seeking a cure, but she is certified as incurable. Only income 7*s.* 6*d.* per week from health insurance and a grant from the Nation's Fund for Nurses. She is trying to obtain a pension from the Streatham Home for Incurables. At present living at a Home for Ladies of Limited Means, and is paying £1 per week for board and lodging. Voted £18 in three instalments.

M.B., C.M. Edin., aged 72, who practised in North London. Owing to overwork during the war his health suffered, and after a serious attack of influenza had eczema all over his body. Applicant has had very little work to do the last two years, and three children helped to support him, but owing to trade depression cannot do so now. He is trying for the Old Age Pension. Voted £30 in 12 instalments.

Widow, aged 52, of L.R.C.P.S. Glasg. who practised in Blackpool and died in 1921. Applicant asks for help to enable the youngest daughter to enter a scholastic training college. The money received from the practice was invested and brings in £45 per annum, and for one year only she is to receive £50 for the furniture. The third daughter is a chemist's apprentice, and pays her mother 30*s.* a week for her keep. Rent of the flat amounts to 30*s.* a week. The Fund has granted £20, which has been paid to the Royal Medical Benevolent Fund Guild, who are supplementing this grant to meet the fees.

Daughter, aged 59, of a doctor who practised at Hindley and died in 1870. Three sisters live together in one room, one an invalid. The eldest had to give up housekeeping owing to ill-health, and the second earned a little money at nursing. The second sister receives a grant from the Fund of £18 in 12 instalments, and the Fund has granted the applicant £18 in 12 instalments, and a special grant of £6.

Daughter, aged 40, of M.R.C.S. Eng. who practised in Yorkshire and died in 1906. Applicant has been an invalid ever since the death of her father, and entirely without means. Dependent on brother-in-law who is now, unfortunately, unable to assist as in the past. Relieved five times, £81. Granted £26 in 12 instalments.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters J. Symonds, K.B.E., C.B., F.R.C.S., at 11, Chandos-street, Cavendish-square, London, W. 1.

THE LATE DR. W. MILES.—The death, at the age of 52, of Dr. William Miles, who received his medical education at Cardiff, and at St. Mary's and Middlesex Hospitals in London, took place recently at Fairfield, Treforest, Glamorganshire. Qualifying L.S.A. in 1903, he obtained the M.R.C.S., L.R.C.P. diplomas two years later, and for several years practised in the Rhydyfelin district. He was a Freemason of the Middlesex Hospital Lodge, a member of the Ystrad and Pentyrch Hunt, and was popular among a wide circle of friends and patients. He leaves a widow, one son, and two daughters.

BRITISH-HUNGARIAN ASSOCIATION FOR COMBATING TUBERCULOSIS.—The Save the Children Fund has received, through the British Minister at Budapest, a cordial expression of thanks, signed by the Deputy Lord Mayor of the city, for its help in initiating, by a substantial grant, the British Hungarian Association for Combating Tuberculosis. The help given, says the Deputy Mayor, has been exceptionally valuable to his city, "which suffered more from the consequences of the war than the capital of any other belligerent State."

INTERFERENCE WITH MEDICAL MEN IN IRELAND.—During the whole period of the conflict in Ireland between the national forces and the forces of the Crown there was comparatively little interference with the functions of medical men. Although in some cases they were prohibited by the military and police authorities from using their motor-cars, in the main they performed their duties without serious molestation. In the disturbances that have taken place recently the same statement is true, but it is liable to very numerous exceptions. The seizing of motor-cars by one or other of the irregular forces operating in the country, or by the thieves who take the opportunity of any civil disturbance to benefit themselves, has not always spared medical men, several of whom have had to submit to their cars being seized before their eyes. Such action is peculiarly cruel, in that it is the sick who really suffer when the facilities for medical practice are embarrassed.

THE LATE DR. EDWARD HUSSEY.—The death of Dr. Edward Hussey occurred on May 15th. Edward Hussey qualified L.R.C.P. and L.M., L.R.C.S. Edin. in 1872, took his M.D. Durh. in 1888, and D.P.H. in 1891. Some years ago he was one of the best known medical practitioners in Brighton, and since his retirement he has devoted his leisure to public work. He interested himself deeply in Poor-law administration, and for many years represented the Preston district of Brighton on the Steyning board of guardians, when his professional knowledge was frequently of great service in the deliberations of that body. Only quite recently he resigned owing to failing health.

QUEEN'S HOSPITAL FOR CHILDREN.—On May 18th at the London Mansion House a luncheon was given in aid of the Queen's Hospital for Children, Hackney-road. The Lord Mayor, who presided, explained that the institution was situated in the midst of crowded streets and alleys—the only playgrounds for the children of the neighbourhood—and consequently a large number of emergency cases had to be cared for. Last year there were 63,000 new out-patient cases, half of which had to be dealt with in the casualty department. Lord William Cecil, chairman of the board of management, said that the hospital was carried on in a most economical manner and that the £10,000 for which an appeal was being made was for maintenance only. Sir Samuel Waring, who proposed the toast of "The Medical, Surgical, and Nursing Staff" in an eloquent speech, paid a high tribute to the skill and devotion to duty of those who daily ministered to the sick. In the course of the luncheon it was announced that a sum of over £4000 had been subscribed towards the £10,000 required.

INTERNATIONAL COUNCIL OF NURSES.—The International Council was founded by Mrs. Bedford Fenwick in London in 1899 by the federation of the National Councils of Nurses of Great Britain and Ireland, the United States of America, and Germany, to which the National Associations of Canada, New Zealand, India, Holland, Denmark, and Finland have since affiliated. Important and harmonious conferences on nursing questions have met in Buffalo, U.S.A., Berlin, Paris, London, and Cologne to discuss professional organisation and self-government, State registration, higher education of nurses, and the ethical and economic standards.

A meeting of the Council was opened in Copenhagen on May 22nd, under the presidency of Mrs. Kenny Tscherning. At the evening session, on May 22nd, the formal reception of the National Associations of Nurses of Belgium, China, Italy, and Norway, and elsewhere took place with becoming ceremony. During their visit the delegates at Copenhagen were shown the leading hospitals and scientific institutions in Denmark, and were hospitably entertained, the proceedings closing with a banquet at the Langelinies Pavilion.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
THURSDAY, June 1st—4.30 P.M., Prof. T. H. Morgan: Croonian Lecture on the Mechanism of Heredity.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Thursday, June 1st.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.
Specimen:
Mr. Gordon Luker: Uterus removed with Solid Ovarian Tumour for Obstructed Labour.
Short Communication:
Mr. Gordon Luker: Carcinoma of Cervix following Gonorrhœal Cervicitis.
Paper:
Prof. Henry Briggs: Conservative Induction of Labour.

UNIVERSITY OF LONDON ADVANCED FREE LECTURES IN MEDICINE, Royal Society of Medicine, 1, Wimpole-street, W.
WEDNESDAY, May 31st.—5 P.M., Prof. J. Babinski: Des Reflexes de Défense.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.
POST-GRADUATE COURSE: May-June, 1922.
CLINICAL LECTURES AND DEMONSTRATIONS.
MONDAY, May 29th.—2 P.M., Dr. Hinds Howell: Outpatient Clinic. 3.30 P.M., Dr. Walshe: Clinical Types of Paraplegia.
TUESDAY, May 30th.—2 P.M., Dr. Grainger Stewart: Outpatient Clinic. 3.30 P.M., Dr. Adie: Muscular Atrophies.
WEDNESDAY, May 31st.—2.15 P.M., Dr. Aldren Turner: Clinical Demonstration.
THURSDAY, June 1st.—2 P.M., Dr. Kinnier Wilson: Outpatient Clinic. 3.30 P.M., Dr. Grainger Stewart: Disease of the Pituitary Body.
FRIDAY, June 2nd.—2 P.M., Dr. Gordon Holmes: Outpatient Clinic. 3.30 P.M., Mr. Sargent: Pituitary Tumours.
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.
NEURO-PATHOLOGY.—Dr. J. Godwin Greenfield.
MONDAY, May 29th.—12 noon, Neuroglial and Vascular Reactions in the Central Nervous System.
THURSDAY, June 1st.—12 noon, The Paths of Infection of the Central Nervous System.
ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.—Dr. Gordon Holmes.
TUESDAY, May 30th.—12 noon, Brain Stem: Medulla Oblongata.
FRIDAY, June 2nd.—12 noon, Pons and Cerebellum.
WEDNESDAY, May 31st.—Demonstrations by Dr. Adie on Methods of Examining Cases of Nervous Disease, and Interpretation of Physical Signs.
An inclusive fee of £10 10*s.* will be charged for the whole course. Any part of the course may be taken separately at a special fee. A special arrangement can be made for those unable to attend the whole course. For details with regard to these special arrangements, application must be made to the Dean. Fees should be paid to the Secretary of the Hospital at the office on entering for the course.
C. M. HINDS HOWELL, Dean of Medical School.

FELLOWSHIP OF MEDICINE POST-GRADUATE LECTURES.
MONDAY, May 29th.—4.45 P.M., at the Western General Dispensary, Marylebone-road, N.W., Dr. H. E. Archer: The Wassermann Reaction in General Practice. (With Demonstration.)
TUESDAY.—5 P.M., at the Royal Society of Medicine, Sir W. Arbuthnot Lane: Stasis.
THURSDAY, June 1st.—4.45 P.M., at the Western General Dispensary, Dr. H. Adamson: Practical Demonstration of Skin Diseases in Children.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY, May 29th.—10.30 A.M., Mr. Maingot: Surgical Pathology. 12.15 P.M., Dr. Burnford: Pathological Demonstration. 5 P.M., Mr. Donald Armour: Cerebral Surgery.
TUESDAY.—10 A.M., Dr. Paterson: Demonstration of Medical Cases. 12 noon, Mr. Sinclair: Surgical Diseases of Abdomen. 5 P.M., Sir R. Armstrong-Jones: Common Forms of Mental Disorder.
WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Dr. Owen: Medical Out-patients.
THURSDAY, June 1st.—10 A.M., Dr. Grainger Stewart: Neurological Department. 12 noon, Dr. Scott Pinchin: Diseases of the Heart. 5 P.M., Dr. Edwin Smith: Some Practical Points in Forensic Medicine.
FRIDAY.—10 A.M., Mr. Simmonds: Demonstration of Surgical Cases. 12.15 P.M., Dr. Burnford: Applied Pathology. 5 P.M., Mr. Sinclair: Foreign Bodies.
SATURDAY.—9 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Mr. Simmonds: Orthopædic Department.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M. 2 P.M., In-patients, Out-patients, Operations, Special Departments.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Ouseley-road, Balham.
TUESDAY, May 30th.—4 P.M., Mr. L. G. Phillips: Common Errors in Diagnosis in regard to Pelvic Disease.

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, W.
THURSDAY, June 1st.—5 P.M., Sir A. Cruickshank Houston: The Purification of Water.

LONDON HOSPITAL MEDICAL COLLEGE, Mile End, E.
Lectures on Advanced Surgery in the Clinical Theatre.
THURSDAY, June 1st.—4.15 P.M., Mr. Robert Milne: Operative Treatment of Spinal Caries.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.
MONDAY, May 29th.—5.30 P.M., Dr. R. O. Moon: Cardiac Arrhythmias.
Daily, 10 A.M. and 2 P.M., Visits to In-patients and Out-patients.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, June 1st.—4 P.M., Dr. Hutchison: Convulsions.

Appointments.

ARMOUR, D. J., F.R.C.S. Eng., M.R.C.P. Lond., has been appointed a Consulting Surgeon to the Italian Hospital, Queen-square, W.C.
COOMBES, FLORENCE E., M.B., B.S. Lond., Resident Medical Officer, Canning Town Settlement Hospital.
OLLERENSHAW, R., M.D., Ch.B. Vict., F.R.C.S. Eng., Orthopædic Surgeon to Manchester Children's Hospital.
SOUTHAM, A. H., M.Ch., F.R.C.S., Honorary Surgeon for Children to the Manchester Northern Hospital.
King's College Hospital and Medical School: WILTSHIRE, W. H., M.D. Cantab., F.R.C.P. Lond., Medical Tutor and Teacher of Practical Medicine. WAKELEY, C. P. G., F.R.C.S. Eng., Junior Surgeon, Teacher of Clinical Surgery, and Surgical Tutor. BUXTON, ST. J. DUDLEY, M.B., B.S. Lond., F.R.C.S. Eng., Junior Orthopædist and Junior Surgeon.
St. Thomas's Hospital Medical School: CAIGER, F. F., M.D., B.S. Lond., F.R.C.P. Lond., Emeritus Physician. CORNER, E. M., M.Ch. Cantab., Consulting Surgeon. LOW, H., M.D., B.Ch. Cantab., Consulting Anæsthetist. ADAMS, J. E., M.S. Lond., Surgeon. MITCHINER, P. H., M.S. Lond., Surgeon in charge of Out-patients. SHELLEY, L. W., M.B., B.Ch. Cantab., Anæsthetist. BAMFORTH, J., M.D., Ch.B., D.P.H. Liverp., Assistant Bacteriologist. MAXWELL, L. B., M.B., B.Ch. Cantab., Resident Assistant Physician. SMITH, J. F., M.R.C.S., L.R.C.P. Lond., John and Temple Research Fellow. RUSSELL, H. B., M.D. Lond., M.R.C.P. Lond., Medical Registrar. ROBINSON, R. H. O. B., M.B., B.Ch. Cantab., F.R.C.S. Eng., Surgical Registrar. PERKINS, G., M.B., M.Ch. Oxon., F.R.C.S. Eng., Orthopædic Registrar.
St. Thomas's Hospital: HARVEY, S. E., M.R.C.S., L.R.C.P. Lond.; BURNS, C. L. C., M.R.C.S., L.R.C.P. Lond.; BHANDARI, P. C., M.R.C.S., L.R.C.P. Lond.; DREW, J. G. M.R.C.S., L.R.C.P. Lond.; WILLIAMS, B. W., M.R.C.S., L.R.C.P. Lond.; HACKWOOD, J. F., M.R.C.S., L.R.C.P. Lond.; CHAVASSE, C. C. H., M.B., B.Ch. Oxon.; WITHAM, H. N., M.R.C.S., L.R.C.P. Lond., Casualty Officers and Resident Anæsthetists. SLAUGHTER, H. L., M.R.C.S., L.R.C.P. Lond.; MCCLEAN, D., M.R.C.S., L.R.C.P. Lond.; WILLEY, H. L., M.B., B.Ch. Cantab.; TALLERMAN, K. H., M.B., B.Ch. Cantab., Resident House Physicians. HAMILTON, C. K. J., M.B., B.Ch. Oxon., Resident House Physician for Children. PHILLIPPS, F. A., M.B., B.Ch. Cantab.; BURRELL, E. M., M.B., B.Ch. Cantab.; HARTLEY, S., M.R.C.S., L.R.C.P. Lond.; SPIRA, J., M.R.C.S., L.R.C.P. Lond., Resident House Surgeons. BROCKMAN, E. P., M.B., B.Ch. Cantab., Resident Orthopædic House Surgeon. PATRICK, C. V., M.R.C.S., L.R.C.P. Lond., Resident House Surgeon for Ear, Nose and Throat. BACK, G. A., M.R.C.S., L.R.C.P. Lond., Senior Obstetric House Physician. GRANGER, E. D., M.B., B.S. Lond., Junior Obstetric House Physician. HUMFREY, S. H. G., M.R.C.S., L.R.C.P. Lond., Senior Ophthalmic House Surgeon. CAVENAGH, J. B., M.B., B.Ch. Oxon.; NICHOL, R. W., M.R.C.S., L.R.C.P. Lond.; GOUGH, J. H. H., M.R.C.S., L.R.C.P. Lond.; PATRICK, C. V., M.R.C.S., L.R.C.P. Lond.; GAYDON, F. A., M.R.C.S., L.R.C.P. Lond.; MACPHERSON, N. S., M.R.C.S., L.R.C.P. Lond.; BAIN, C. W. C., M.R.C.S., L.R.C.P. Lond.; OLIVER, C. P., M.R.C.S., L.R.C.P. Lond.; PARSONS-SMITH, B. T., M.D. Lond.; SMITH, E. F., M.R.C.S., L.R.C.P. Lond., Clinical Assistants.
Certifying Surgeons under the Factory and Workshop Acts: JONES, A. L., M.R.C.S. (Brynmawr); FORBES, C. M., M.B., Ch.B. Glasg. (Weymouth).

Vacancies.

For further information refer to the advertisement columns.

All Saints Hospital for Genito-Urinary Diseases, Vauxhall Bridge-road, S.W.—Res. H.S. £120. Radiographer. £100.
Benenden, Kent, National Sanatorium.—Asst. M.O. £250.
Biggleswade Rural and Urban District Councils.—Part-time M.O.H. £300.
Bradford Children's Hospital.—H.S. £180.
Bristol General Hospital.—Hon. Clin. Assts.
Cambridge, Addenbrooke's Hospital.—H.S. £130.
Chester County Mental Hospital.—Med. Locum Tenens. 7 guineas a week.
Countess of Dufferin's Fund, Women's Medical Service, India.—Pathologist
Croydon General Hospital.—Hon. Jun. P. and Hon. Jun. S.
Doncaster Royal Infirmary and Dispensary.—Sen. H.S. £220.
Dundee Royal Infirmary.—Med. Supt. £1000.
Durham County Sanatorium, Wolsingham.—Asst. M.O. £400.
Evelina Hospital for Children, Southwark, S.E.—H.S. £160.
Exminster, Devon Mental Hospital.—Third Asst. M.O. £300.
Great Yarmouth Hospital.—H.S. £200.
Hospital for Women, Soho-square.—Clin. Assts.
Italian Hospital, Queen-square, W.C.—Hon. Ophth. Surg.
Kensington Dispensary and Children's Hospital, Church-street, Kensington, W.—Res. M.O.
King's College for Women, Campden Hill-road.—Asst. Lect. in Hygiene and Bact. £600.
King Edward VII. Sanatorium, Midhurst, Sussex.—Pathologist. £400.
Lancaster Royal Infirmary.—H.S. £200.
Leicester Isolation Hospital and Sanatorium.—Med. Supt. £600.
Liverpool City Infectious Hospitals.—Asst. Res. M.O. £250.
Liverpool Hospital for Children, Leasowe, Cheshire.—Res. Jun. M.O. £250.
London Lock Hospital, 91, Dean-street.—Clin. Assts.
London Temperance Hospital, Hampstead-road, N.W.—Asst. Cas. O. 100 guineas.
Macclesfield General Infirmary.—Sen. H.S. £200.
Manchester County Asylum, Prestwich.—Locum Tenens. £8 8s. per week.
Manchester Northern Hospital for Women and Children.—H.S. £200.
Manchester, St. Mary's Hospitals for Women &c.—H.S. £100.
Metropolitan Ear, Nose and Throat Hospital, 2, Fitzroy-square, W.—Sen. Clin. Asst.
Middlesex Hospital, W.—Hon. Anæsth., Dent. S., and Asst. Dent. S.
Milton and Sittingbourne Urban and Rural District Council.—M.O.H. £550.
Ministry of Agriculture and Fisheries, 10, Whitehall-place, S.W. Asst. Bact. £450 to £550.
Ministry of Pensions Hospital, Cannock Chase, Hednesford, Staffs.—Jun. M.O. £350.
Nottingham General Hospital.—H.S. £200.
Oxford, Radcliffe Infirmary and County Hospital.—Cas. H.S. and Res. Accoucheur. Each £200.
Queen Mary's Hospital for the East End, Stratford, E.—Res. M.O. £300.
Royal Free Hospital, Gray's Inn-road, W.C.—Asst. P.
Royal London Ophthalmic Hospital, City-road, E.C.—Refraction Asst. £100.
Royal National Orthopædic Hospital, 234, Gt. Portland-street, W.—H.S. £150.
Royal Westminster Ophthalmic Hospital, King William-street, Strand.—Asst. S.
St. George's Hospital, S.W.—Res. Anæsthetist. £100.
Sheffield, Jessop Hospital for Women.—Asst. H.S.'s. £100.
Sheffield Royal Infirmary.—Two H.P.'s, H.S., Ophth. H.S., and Asst. Cas. O. Each £150.
Southampton County Borough.—Asst. M.O.H. £500.
Southport General Infirmary.—Jun. H.S. £175.
Sunderland Borough Mental Hospital.—Med. Supt. £1000.
Victoria Hospital for Children, Tite-street, Chelsea.—Sen. Res. M.O. £250.
West London Hospital, Hammersmith-road, W.—Two H.P.'s and H.S. Each £100.
Westminster Hospital, Broad Sanctuary, S.W.—Asst. H.P. and Asst. H.S. £52.
Wigan, Royal Albert Edward Infirmary.—Jun. H.S. £175.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointment: Thrapston (Northampton).

Births, Marriages, and Deaths.

BIRTHS.

BATES.—On May 20th, at West Malling, Kent, the wife of Dr. J. Vincent Bates, of a son.
GLOVER.—On May 20th, at Rosslyn-hill, N.W., the wife of James Alison Glover, O.B.E., M.D., of a son.

DEATHS.

COKE.—On May 17th, at Enfield Lodge, Christ Church-road, Folkestone, William Harriott Coke, M.R.C.S. Eng., L.R.C.P. Lond., aged 71.
NOBLE.—On May 15th, at Bude, Hugh Percy Noble, M.B., B.S., aged 49 years.

Notes, Short Comments, and Answers to Correspondents.

MODERN IDEAS RESPECTING ACIDITY AND ALKALINITY.*

BY F. W. GAMBLE, PH.C., F.C.S.,
AND
NORMAN EVERS, B.Sc., F.I.C.

IT is recorded that the Romans were in the habit of testing the alkalinity of their drinking water by titrating it with drops of red wine until the colouring matter was no longer bleached. This must be the earliest use of an indicator. It is primitive in its crudeness, employing a substance of varying acidity for judging alkalinity. Although modern standards are more exact than the wine standard used by the Romans, the modern choice of indicators is often no more logical.

Litmus remained for many years practically the only indicator of acidity and alkalinity used by chemists, and litmus paper is still employed to a large extent. It is, however, in many respects a bad indicator compared with the newer synthetic substances. Phenolphthalein and methyl orange and other indicators have been employed for a number of years, but chiefly in titrations. The uses of the indicators now employed for the determination of hydrogen-ion concentration are an outcome of the developments of the theory of electrolytic dissociation and of the electrometric methods of determining hydrogen-ion concentration. Chemists in early days divided solutions crudely into acid, neutral, and alkaline, and it was not until the ionic theory was developed that the subject was given continuity.

The Ionic Theory.

According to the ionic theory, when hydrochloric acid is dissolved in water it is present only to a very small extent in solutions as molecules of HCl, but is dissociated almost completely into ions of hydrogen and chlorine. The hydrogen ions are, according to modern ideas, atoms of hydrogen which have lost an electron, and so known positively charged, while the chlorine ions have gained an electron and become negatively charged. The acid properties of solutions are due solely to the hydrogen ions which they contain. Some "weak" acids are only dissociated into ions to a very slight extent. The strength of an acid depends entirely on the number of hydrogen ions present in a certain volume of its solution—that is, on the hydrogen-ion concentration, not on the amount of acid present. A distinction must be made between the acidity of a liquid and the amount of acid present. The former depends upon the hydrogen-ion concentration, the latter is determined by titration. Similarly, bases depend for their properties on the presence of hydroxyl (OH) ions, and the strength of a base depends on the number of hydroxyl ions present in its solutions.

Absolutely pure water is itself ionised to a slight extent into hydrogen and hydroxyl ions; obviously the number of hydrogen ions must in this case be equal to the number of hydroxyl ions. Pure water, therefore, is neutral, its acid and alkaline properties being evenly balanced.

It contains about a billion hydrogen ions and a billion hydroxyl ions per litre. In order to realise that all acid solutions, even the strongest, contain hydroxyl ions as well as hydrogen ions, though the latter are in excess, we may take the analogy of a Parliamentary constituency, which we call a Unionist constituency because it returns a Unionist Member to Parliament. But it does not follow that some Liberals are not to be found there, and though they may be a vanishing quantity in certain places yet there is no place so enlightened or benighted (as the case may be) that their number is zero. We might, therefore, speak of the concentration of Liberals in a Unionist constituency. Exactly in the same way we can talk of the hydrogen-ion concentration of alkaline solutions. In fact, it is usual to refer to the hydrogen-ion concentration of all solutions, acid or alkaline, as it involves the use of one factor only, and the hydroxyl-ion concentration can always be calculated therefrom. The concentration of solutions is usually expressed in terms of a normal solution, a solution which contains in one litre an amount of the substance corresponding to one gramme atom of hydrogen (i.e., 1·008 g). Hydrogen-ion concentration may be expressed in the same way; a normal concentration would, therefore, be one gramme (more strictly 1·008 g.) of hydrogen ions per litre.

* Abridged from an address given to the Pharmaceutical Society on Feb. 24th, 1922, and published in full in the Pharmaceutical Journal of March 4th, 1922.

The Value of pH.

Now the usual method adopted for expressing hydrogen-ion concentration is not the rather cumbersome method of normality, but by a value which we know as pH. Pure water containing about a billion hydrogen ions and a billion hydroxyl ions per litre, has thus a hydrogen-ion concentration of one ten-millionth g. per litre, or one ten-millionth normal, that is $N/10^7$. The pH of pure water is therefore 7. Similarly, a tenth-normal hydrogen-ion concentration, N/10, has a pH of 1, and a hundred thousand millionth normal hydrogen-ion concentration, $N/10^{11}$, has a pH of 11. Similarly a fiftieth normal hydrogen-ion concentration, N/50, has a pH of 1·7, N/50 being $N/10^{1·7}$.

The points to bear in mind in regard to pH values are:—(1) The higher the value of pH the lower is the hydrogen-ion concentration, and (2) if the pH is altered by one integer, the hydrogen-ion concentration is altered ten times. Solutions having pH values of less than 7 are acid, and those of pH greater than 7 are alkaline. The hydroxyl-ion concentration or pOH is obtained by subtracting the pH value from 14. In much of the work of Pasteur we can trace appreciation of the great influence of the reaction of liquids on enzymes and bacteria. We can see his endeavour to interpret his varying reactions with litmus in relation to an unfixed point of absolute neutrality. As biochemistry developed, the great importance of this factor was clearly seen, and more accurate methods of determination became a necessity.

Method of Determining pH.

There are two methods of determining hydrogen-ion concentration—the electrometric and the colorimetric. The electrometric method is the more accurate, but it requires expensive and complicated apparatus, and careful attention must be given to detail in order to obtain accurate results The more generally useful method is the colorimetric or indicator method, the data for which are necessarily obtained by comparison with electrometric standards. An indicator is a substance whose colour is affected by the pH of a solution. For example, methyl red has a red colour at a pH of 4·4, and in all solutions of greater acidity than this. Above 4·4 the red colour gradually changes to a pure yellow at a pH of 6·2, above which no further change occurs. We say, then, that methyl red is an indicator which changes colour over a range of pH from 4·4 to 6·2; it will be observed that the change takes place on the acid side of absolute neutrality. Phenolphthalein, with which everyone is familiar, changes from colourless to pink from pH = 8·3 to 10, that is well on the alkaline side of absolute neutrality. Now if we have a solution whose pH we require to determine which gives a colour with methyl red intermediate between these two extremes of red and yellow, we know that its pH lies between 4·4 and 6·2. Further, we can prepare standard solutions of any known pH between these points, and by choosing the standard solution which gives exactly the same shade of colour as our unknown with the same amount of indicator we can thus determine the pH closely.

Indicators.

For this method we obviously require a complete series of indicators which change over as wide a range of pH as possible, whose colours are brilliant and contrasting, and show definite changes in shade for a small change of pH. Such a series is shown in the following table:—

Indicator.	Colour change.	Range of pH
Thymol blue (acid range) ..	Red—yellow	1·2– 2·8
Brom-phenol blue	Yellow—blue	2·8– 4·6
Methyl red	Red—yellow	4·4– 6·0
Brom-cresol purple	Yellow—purple	5·2– 6·8
Brom-thymol blue	Yellow—blue	6·0– 7·6
Phenol red	Yellow—red	6·8– 8·4
Thymol blue (alkaline range)	Yellow—blue	8·0– 9·6
Phenol thymol phthalein ...	Colourless—pink—violet	8·3–11·0
Thymol violet.....	Yellow—blue—violet	9·0–13·0

The essentials of a good indicator are: (1) The colour change should be sharp. (2) The two end colours of the indicator should form as great a contrast as possible. (3) The indicator should be affected to the least possible extent by the presence of neutral salts or other compounds. In all these points the newer indicators have advantages over the old; they cover the complete range from pH 1·0 to pH 13·0.

The defects of litmus as an indicator are: (1) The colouring matter of litmus does not consist of a single substance, and its composition depends to a large extent on the method of extraction. (2) Its colour change is slow compared with the newer indicators and the colours are not so brilliant. Azolitmin, which is the chief indicating substance present in litmus, changes colour from pH 4·5–8·3, a very much larger range than that of the new indicators. (3) It is affected by the presence of salts and proteins. Certain liquids, such as milk, urine, and solutions of phosphates, sometimes described as "amphoteric" to litmus as though they had some remarkable property of being acid and alkaline at the same time, are actually solutions of neutral reaction which bring the colour of both red and blue litmus to its neutral tint. It is possible, therefore, to find solutions of exactly the same pH which give quite different indications with the same litmus paper and again different results with other kinds of litmus paper.

Buffer Action.

If we add one drop of weak hydrochloric acid to pure distilled water we probably change its pH by several integers, say, from 7 to 3. If we add the same amount of acid to water containing a little sodium phosphate the change of pH will be very slight indeed. The phosphate exerts what is known as buffer action—i.e., it tends to resist the change of pH on the addition of acid or alkali. Salts of weak polybasic acids such as phosphates, carbonates, citrates, or borates exert the strongest buffer action; proteins or amino-acids are also good buffers, whilst all salts of weak acids show the property to some extent. The buffer action of salts of strong acids and bases—e.g., sodium chloride—is very slight indeed. This explains why when a strong acid is titrated with a strong base to an indicator the end-point is sharp, but with weak acids the end-point is difficult to determine because the pH is changing more slowly. All physiological fluids show buffer action, which is of the utmost importance in our bodily functions. It is of great physiological importance that the blood should be kept within certain narrow limits of pH, and were it not for this buffer action a small introduction of acid into the blood-stream would raise its pH to such an extent that the symptoms of acidosis would speedily occur. Fortunately, the sodium bicarbonate of the blood must be entirely neutralised before the pH rises to a dangerous point, and this only occurs in very abnormal conditions. We may liken the action of buffer salt which prevents changes of hydrogen-ion concentration to a thermostat which prevents changes of temperature.

The first requirement for the use of the indicator method is the preparation of solutions of standard pH from salts which show buffer action. If we tried to make solutions of standard pH by using hydrochloric acid, for instance, or any acid or salt which does not show buffer action, we should find that these solutions were so readily affected by the acidity of the air or the alkalinity of the glass container that their pH would quickly be changed, and they would be useless. By using a buffer salt such as sodium phosphate, the solutions are comparatively unaffected by outside influences. Instead of using a number of indicators, each covering a certain pH range, it is often convenient to use a suitable mixture of indicators covering a much wider range. The compound indicator, devised by Mr. J. L. Lizius, B.Sc., A.I.C., shows colour changes through the spectrum from red to violet over the wide range of pH from 4 to 11. A small tablet containing a definite amount of the compound indicator is dropped into 10 c.cm. of the solution to be tested, and in about a minute it has dissolved, giving a definite colour to the solution. According to the shade of colour obtained one can write down at once the approximate pH. We are able, therefore, to determine by a simple test as easily applied as the ordinary test with litmus paper—not only whether a solution is acid or alkaline, but also an approximate measure of the degree of acidity or alkalinity.

It might seem at first sight that dilution of a solution (sometimes necessary if the solution to be tested is coloured) would cause a considerable alteration in its pH; while this is so with pure solutions of strong highly dissociated acids, such as hydrochloric acid, there are many buffer solutions which may be diluted 10 or 20 times with scarcely any appreciable change of pH. In determining the pH by the indicator method the effect of a moderate amount of dilution can, therefore, in most cases be neglected.

Practical Applications.

It may be asked, "What is the use of all this? Does it matter whether a solution has pH 6 or 7, whether it has a hydrogen-ion concentration of one-millionth or one ten-millionth gramme per litre?"

The vitality of living cells is dependent upon the maintenance of a strictly limited hydrogen-ion concentration in their environment, and a difference of pH such as that indicated may have a serious effect upon their growth, or even prevent growth altogether. All living cells or organisms, yeasts, moulds, bacteria, &c., have definite ranges of pH within which growth is possible, and one definite pH at which growth proceeds at a maximum, just as they have an optimum temperature. For example, *B. coli* grows best at pH 5·0, yeast at 2·5. *B. subtilis* can only grow at pH 4·2 to 9·4.

In order that we may grow these organisms in the laboratory, it is, therefore, important that the medium in which they are cultivated should be at the optimum reaction for their growth. Media for the growth of bacteria, yeasts, &c., are, therefore, adjusted to a definite hydrogen-ion concentration suitable to the organism to be grown. In this way it may even be possible by choosing the pH of the medium to

encourage the growth of one organism and to discourage others. The hydrogen-ion concentration of physiological fluids is kept by remarkably constant buffer action. The following are a few examples of the pH of body fluids :—

	pH.		pH.
Pancreatic juice	8·3	Cow's milk	6·7
Blood	7·4	Urine	6·0
Tears	7·2	Perspiration	4·5
Human milk	7·1	Infant's gastric juice	5·0
Saliva	6·9	Adult gastric juice	0·9–1·6

In the vital processes the hydrogen ions appear not to be directly concerned with the chemical transformations effected, for instance, by the digestive enzymes : they play the part of a conditioning agent like temperature, but their concentration must be within certain limits which differ, for example, in different portions of the digestive tract. Thus, besides an optimum temperature—that of the body—there is for each enzyme an optimum pH as follows :—

Enzyme.	Optimum value of pH.
Trypsin	8·0
Pepsin	1·4
Invertase	4·5

The optimum pH value agrees approximately with that of the fluids in which their action naturally takes place.

Proteins are able to function both as acids and bases, and are, therefore, known as amphoteric electrolytes or ampholytes. A protein may dissociate into hydrogen ions and negatively charged groups, or into hydroxyl ions and positively charged groups. Enzymes also function as ampholytes If the hydrogen-ion concentration is greater than at the isoelectric point the enzyme exists mainly as kations, whereas if the solution be alkaline to this point the enzyme exists mainly as anions. Now, maltose, trypsin, and erepsin are known to be active only as anions, pepsin as kations, and invertase as undissociated molecules.

Curiously, although undissociated pepsin has no action on ordinary proteins, it has the property of curdling milk. A most important consideration is the stability of some physiologically active principles under different conditions of hydrogen-ion concentration. In order to maintain the original activity of, for example, the pituitary gland, it is of the utmost importance that extraction should be carried out under definite conditions of hydrogen-ion concentration. Solutions of certain alkaloids, such as cocaine and its derivatives, become less active if allowed to become alkaline. Strophanthin also is rapidly rendered physiologically inert by alkali.

The disinfectant or preservative action of acids and bases is in large measure due to the hydrogen or hydroxyl ions, and a study of methods of sterilisation and pasteurisation would probably show that the effective temperature required depends on the hydrogen-ion concentration. The preservative effect of hydrogen ions is made use of in the preservation of foods by vinegar. All acid beverages depend for their "sharpness" upon the hydrogen-ion content, as the following figures show :—

	pH value.		pH value.
Lime juice	1·7	Beers	3·9–4·7
Lemon juice	2·2	Pear juice	4·2
Wines	2·8–3·8	Grape juice	4·5
Orange juice	3·1–4·1		

The effect of pH on the stability of vitamins has not yet been systematically studied, but there is no doubt that C vitamin, the antiscorbutic vitamin, is rapidly destroyed by alkali, and is only stable in acid media.

Milk straight from the cow has a pH of 6·8—i.e., almost neutral ; but with the growth of lactic acid-producing bacilli the pH diminishes until at 6·0 it begins to taste sour. At 4·6 (the isoelectric point of casein) coagulation occurs.

Of interest to the botanist or horticulturist is the hydrogen-ion concentration of soils, which differ widely in this respect. Just as in the case of bacteria, different species of plants probably have optimum hydrogen-ion concentrations at which they grow best. Every gardener knows crudely that when a soil becomes too acid it is less productive and must be treated with lime.

Many other instances could be given of the value of this method in analytical or research laboratories, in the pharmacy or manufacturing laboratory. We may use it for testing the acidity of gelatin, starches, sulphur, and many other products, and for the alkalinity of soap solutions or drinking water. Quite apart from biochemical investigations, where a difference of 0·1 pH may be important, the approximate determination of pH by such means as have been indicated is not only a great advance on the use of litmus paper, but provides us with valuable comparative information which litmus cannot give. May we hope that the pharmacists of the future will think of acidity and alkalinity in terms of hydrogen-ion concentration instead of in terms of litmus paper, and that even in the B.P. the more scientific method will be recognised.

PERSONAL HYGIENE IN INDUSTRY.

THOSE who learn habits of cleanliness in factories and workshops not merely acquire improved health and increased self-respect, but almost unconsciously carry these habits with them to their homes. In order to help employers to further this policy the Home Office has just issued a valuable pamphlet[1] dealing with cloak-rooms, washing facilities, drinking water, and sanitary accommodation. Already in a number of industries and processes accommodation for these purposes is called for under the Factory Acts or under Welfare Orders ; but advice is needed as to how compliance can best be given to these legal requirements. The section of this pamphlet devoted to cloak-rooms contains new matter and plans which show how the maximum of use can be made of available space ; how proprietorship of the clothes can be effected, and how means may be adopted for drying wet outdoor clothes in bad weather. Different plans and suggestions are made according to the number of workers to be catered for. The illustrations given show that the most favourite plan is to attach the clothes to hooks and then haul them up out of reach. In large factories such a device may be unnecessary, since an attendant may be engaged with the sole duty of taking in and issuing the clothes. Cleanliness is throughout the keynote of all the schemes described. Washing accommodation is dealt with, and means are described by which plumbing can be reduced to a minimum and the ubiquitous, but unnecessary, trap be eliminated. An excellent trough with spray taps is shown and also an ingenious nest of tip-up basins. Devices for supplying soap are illustrated, and suggestions are made with regard to the supply of towels and nail-brushes. The space given to baths is well used, and we note that no baths except shower or douche baths are considered. One ingenious arrangement for saving wall space is noteworthy. Here the baths are arranged on each side of a zig-zag wall. The seat for the bather being at the apex of the triangle, thus the same masonry is used on both sides. Special attention is given to this type of baths for women workers, which indicates that there is a call for bathing accommodation in many industries over and beyond those such as coal-mining, generally accepted to require such accommodation. Illustrations are also given of appliances for supplying drinking water ; of these the drinking fountain appears to be most popular and simple. No one familiar with the industries of this country ten years ago who reads this pamphlet can fail to be struck with the revolution which is taking place with regard to personal care for the workers. This is the eighth pamphlet of the Welfare Series published by the Home Office. We recommend it together with its fellows as publications at once cheap and invaluable for their purpose.

INFANT WELFARE.

A MEETING of the National Baby Week Council was held at 117, Piccadilly, on May 9th, when Dr. Eric Pritchard, the chairman, made a statement as to the policy and work accomplished during the past year, and the programme for the future. Addresses were then given on current problems bearing on infant welfare. In the first of these, Sir Arthur Newsholme spoke on

Mortality in the First Month after Birth, and the Possibility of Reducing it.

After a preliminary review showing the directions in which action for the diminution of child mortality had hitherto been most successful, he considered some of the factors in the causation of mortality in the first week and first month after live-birth and of still-births. Erroneous deductions had been drawn from national statistics, which when massed showed but little decline in first-month mortality. It was a good illustration of the dangers of averages, which might be almost as deceptive as an average struck between the condition of the rich man and Lazarus. It was necessary to dissect average statistics and to ascertain extent of variations in mortality. When this was done, it was found that infant mortality in the first month varied between 25 and 65 per 1000 births, and there was ample scope, therefore, for preventive work. Nor could it be stated that 25 was an irreducible minimum, as shown, for instance, by the facts that dystocia and syphilis prevailed in nearly all grades of society. The same necessity for seeking comparative figures and shunning averages held good for maternal mortality due to childbearing, for which as for early infant mortality there were wide ranges of death-rate in different wards of towns, as well as in different sanitary areas.

Antisyphilitic work was of great importance in infantile hygiene. For every 100 live-births there were approximately four still-births, occurring after the seventh month of pregnancy. The proportion of these, which were due to

[1] Cloak-rooms, Washing Facilities, Drinking Water, and Sanitary Accommodation in Factories and Workshops. Welfare Pamphlet No. 8. H.M. Stationery Office. 1921. Price 1s.

syphilis, doubtless varied in different communities: but in some exact investigations made by Dr. Whitridge Williams of Johns Hopkins Hospital, 15 per cent. of the deaths of white infants from the seventh month of pregnancy to the end of the first 14 days after birth were attributed to this cause. The prevention of further deaths from this cause in the family concerned and the ridding of the family of syphilitic infection involved problems of great difficulty; but it deserved comment that while this potential and important field of public health work remained almost completely uncultivated, there was agitation for notification of all cases of syphilis, the following up of which would be quite as difficult.

In the remainder of his address Sir Arthur Newsholme dealt with the relation of infant welfare to the neglected functional aspects of housing, with coöperation means for domestic assistance, and with the objections to parsimony in regard to money needed for this important work at a time when the nation as a whole was spending approximately as much every week on alcoholic drinks as it spent in a year on public health work.

Dr. Janet Lane-Claypon's address on the

Milk Question

was an admirable summary of our present knowledge of this subject and of the practical inferences to be drawn from this knowledge. She emphasised the importance of distinguishing between the different varieties of "heated milk," showing the absence of evidence that milk, domestically "brought to the boil" or pasteurised milk has lost any vital element. With all possible precautions to secure milk of a high grade, it was impossible in practice to ensure entire safety for the child, unless the milk was also pasteurised or boiled. High-grade milk was valuable, however, because the purchaser was guaranteed against unwittingly purchasing milk which might have been pasteurised two or even three times, and which, because of its age or of the processes to which it had been subjected, was dangerous for the child. There was reason for thinking that dried milk and fresh pasteurised milk were equally valuable, and the choice between them was one which might be determined by local circumstances.

Under the auspices of the National Association for the Prevention of Infant Mortality and National Baby Week Council a series of conferences on Infant Welfare will be held on July 3rd, 4th, and 5th at 117, Piccadilly. Among the medical men and women taking part are Dr. R. A. Lyster, Dr. R. D. Smedley, Dr. W. A. Bullough, Dr. R. W. Stocks, Dr. Margaret Stogarth, Dr. Corry Mann, Dr. G. F. Buchan, Dr. C. W. Saleeby, and Prof. E. L. Collis. Further particulars may be obtained from the hon. secretary, Miss J. Halford, 117, Piccadilly, W. 1.

PUBLIC HEALTH IN ASSAM.

THE report of the Sanitary Commissioner [1] for Assam (1920) deals only with the "plains districts" of the province, the "hill districts" are excluded. The population at the census of 1911 was 6,051,507, and this has been taken as the basis for calculation of ratios; the 1921 census shows an increase of about 13 per cent. and in some districts over 30 per cent.; the birth and death ratios must therefore be taken cum grano; in the Surma Valley districts, however (Cachar and Sylhet), there was little change. The birth and death ratios were 31·53 and 28·98, compared with 32·19 and 36·54 respectively for the quinquennial mean. In Sylhet (which is the most populous district, having some 2½ million inhabitants) the birth-rate was only 27·67, while in the adjoining district of Cachar it was 32·85, and in Goalpara 43·60. It is difficult to account for such wide differences in the birth-rate, assuming the accuracy of registration. The general death-rate for the province (28·98) shows a return to the normal, pre-influenza, quinquennium of 1913–17, when it was 27·77; if calculated on the provisional census population of 1921, the ratio would be only 25·61; in Darrang district the ratio was highest (37·22), in Sibsagar only 25·02, and in Kamrup 24·37. Amongst Hindus, who form more than half the population, the death-rate was 27·47, for Mohammedans 29·24, and Buddhists 19·72; while for Christians it was 31·25, and in the category of "other classes," which is a large group numbering 557,735 and chiefly composed of "Animists," the ratio was 37·89. ("Animism" is "the attribution of a living soul to inanimate objects and natural phenomena.") Infantile mortality (187·57 per 1000 births) was lower than in any of the five years preceding, and lower also than in Bengal, the United Provinces, and Central Provinces during the year.

Cholera was much less prevalent than in 1919 and recent years, the death-rate being 0·40, compared with 2·99 per 1000 in the decennium 1910–19; of the total deaths (2421) more than half occurred in Sylhet district (0·56 per 1000), and in Darrang district the ratio was 0·59. All tea-garden coolies recruited during the year were inoculated before entering Assam. The mortality from small-pox (0·28 per 1000) was considerably below the decennial average (0·48); in Sylhet the mortality was 0·46; infection was probably introduced into Habiganj subdivision of this district from Hill Tippera; "the area had not been effectively vaccinated, as vaccination was not compulsory and there had been considerable opposition to it"; the small-pox deaths in this district numbered 1146 (0·46 per 1000). Urban areas throughout the province were almost entirely free, only 10 deaths having resulted from this disease. The mortality from fevers (18·57) was higher than the decennial average (16·76), a large number of these deaths being probably due to kala-azar. Measures of drainage and protection were carried out in many towns and districts. The deaths from kala-azar numbered 2798 (compared with 1667 in 1919), and were more numerous than in any year since 1905; also, many deaths are returned under "fevers." Up to the present segregation has been chiefly relied on; removal to a fresh site prevents communication with other uninfected areas, and treatment with antimony tartrate is a very effective weapon. Every effort has been made to deal with the increase in prevalence by establishment of special kala-azar hospitals, the addition of special wards to existing dispensaries, and by organising 51 additional dispensaries or "out-centres"; 7188 cases were treated during the year, of which 2223 were cured and 360 died. Dysentery and diarrhœa caused only 1·84 deaths per 1000, compared with 2·45 in the preceding decennium, and there was an entire absence of plague throughout the province.

During the year reported on there was considerable depression in the tea industry owing to various economic causes, and this resulted in a reduction and economy in the working of the tea estates, and therefore diminution in the immigration of coolies; only 63,710 entered Assam, compared with 236,808 in the year preceding; as a consequence the cases of infectious disease among these immigrants fell from 2173 to 342, and the deaths from 878 to 92; there were only 8 cases of cholera (2 fatal), compared with 534 (362 fatal) in 1919. This report is presented by Major J. Taylor, I.M.S., who officiated for Major T. C. McC. Young, on the latter's departure on furlough in August, 1920.

Health of the Jail Population.

The jail [2] population in Assam during 1920, with a daily average of 2514 prisoners of all classes, was higher than in any previous year except 1918, when it had been 2567. The convicts averaged 2159, the remainder being under trial, civil, or State prisoners. The general health was satisfactory, the hospital admissions (758 per 1000) having been fewer than in any year of the decade (1911–20), and the daily average sick (35·85 per 1000) less than in any year since 1913. The death ratio, however, was somewhat higher (25·06) than in the five preceding years, attributable to influenza, though lower than the provincial death-rate for the general population (28·98). The health of prisoners on admission was found to be indifferent in 49 per cent. and actually bad in 11 per cent.; 53·88 per cent. suffered from pyorrhœa. In the Assam valley jails 31·55 per cent. of the admissions were addicted to drug habits; and at Dibrugarh (where 1448 prisoners were received) 79·7 per cent. were in this condition; but in the Surma Valley jails the corresponding percentage was only 2·87. Among convicted prisoners there was considerable increase in dysentery, the admissions to hospital and deaths having risen from 53·65 and 0·48 per 1000 in 1919 to 90·30 and 4·17 in 1920; at Gauhati the admission ratio was 185, and at Silchar 473 per 1000. Malaria was not severe (98·64 admissions and 1·39 deaths per 1000). On the whole, 50·4 per cent. of the convicted prisoners gained and only 27·98 lost weight. Although the net cash earnings of the convicts for the year showed a decrease as compared with 1919, Lieut.-Colonel B. H. Deare, I.M.S., Officiating Inspector-General of Prisons, who presents this report, points out that the gross results were not affected to any considerable extent; Rs.78,069, averaging Rs.36.15 per head, against Rs.77,492 and Rs.38.4 in the preceding year: at Sibsagar and Aijal the average earnings were Rs.80.7.0 and Rs.78.10.0 respectively.

Dispensaries.—Lunatics.

In the province of Assam the number of persons who obtained medical relief (1,631,167) in the various dispensaries [3] during 1920 amounted to 20·43 per cent. of the population according to the latest census, compared with 19·22 per cent. in the previous year. The indoor patients increased from 9274 to 9388, the daily averages under treatment being 411·8 and 443·2 respectively; the death-rate was 9·44 per cent., compared with 9·22 in 1919. The chief diseases treated were malaria (1962), injuries of all kinds (1184), eye diseases (550),

[1] Assam Secretariat Press, Shillong, July, 1921.

[2] Report on Jail Administration for 1920, Assam Secretariat, 1921.

[3] Report by Lieut.-Colonel B. H. Deare, Officiating Inspector-General of Civil Hospitals, June, 1921.

dysentery (421), and kala-azar (365). The surgical operations numbered 26,727, resulting in a percentage of 97·14 cures.

The total number of lunatics [4] under confinement has increased from 420 in 1915 to 492 in 1920, the daily average strength having risen from 341·44 to 398·58; 23·16 per cent. of the admissions, however, were natives of other provinces, including tea-garden coolies. The death-rate declined from 5·84 per cent. of average strength in 1918 to 3·51 per cent. in 1920, which was very much lower than in any other province in India, the Bengal ratio having been 10·55, and that for Madras 13·52 in this year; 26·31 per cent. of the deaths were due to tuberculosis.

The beneficent work of the King Edward VII. Memorial Pasteur Institute at Shillong continues to increase, as shown by the fourth annual report [5] for the year ending Dec. 31st, 1920. The total number of cases of hydrophobia treated was in 1917, 567; in the next three years the numbers were 1068, 1408, and 1626. The death ratios have been 0·88, 1·22, 1·07, and 1·29 in the four years respectively; the failures of treatment (0·70, 0·56, 0·43, and 0·49 per cent.) all occurred amongst Indian patients; there was not a single failure among the 296 Europeans treated. Research work, as well as hospital treatment, was carried out in this invaluable institution, as described by Major J. H. Horne, I.M.S., in his short but interesting report, particularly in kala-azar; Mrs. Adie succeeded in discovering an intracellular stage of the Leishman-Donovan body in the gut-cells of *Cimex lectularius*, particulars of which will appear in the *Indian Journal of Medical Research*.

DENTAL ATTENTION DURING PREGNANCY.

THE report of the dentist in charge of the dental maternity centre at Southport states that the attendance was disappointing and that only 410 visits were recorded. It is evident that the importance of dental treatment of expectant mothers is not properly recognised and that considerable propaganda in this direction is necessary. The widespread idea that dental treatment during pregnancy is dangerous should be vigorously combated, since medicine lends no support to such a view. Dr. Harold Waller has shown the harmful effect of dental sepsis in the nursing mother on the health of the child. This provides an additional reason for the treatment being carried out before labour, for it is obvious that the extra duties imposed by the care of an infant must render it more difficult for its mother to visit the dentist.

A DUTCH CATALOGUE OF OLD WORKS ON MEDICINE.

OUT of some 360 titles of rare works on old medicine, advertised for sale by the Internationaal Antiquariaat of Amsterdam, more than 50 relate to the use and abuse of tobacco. This large proportion of books descriptive of a particular kind of intoxication might lead us to infer that old Dutch medicine was chiefly concerned with the evils of smoking, but the works in question are rarely Dutch and mostly modern, and, as a matter of fact, smoking has had from the earliest times a bad name. The priests or councils of the American Indian tribes seem to have been the first known smokers, and probably used tobacco as an intoxicant. They inhaled smoke by way of the mouth or nostrils when treating of war—the "pipe of peace" it was called euphemistically—or when proceeding to utter prophecy. When introduced into Europe, smoking was still held by many to have a mystic significance, and it became necessary for Pope Urbain VIII. to excommunicate certain priests who took tobacco while officiating at the mass. This was in 1624, some 20 years after our own James I. had forbidden the use of tobacco in his realms.

A curious work, No. 241 in the catalogue before us, is the Commentary of Paullus "De Abusu Tabaci Americanorum Veteri, et Herbae Thee Asiaticorum in Europa Novo, quae ipsissima est Chamaeleaguos Dodonaei." This very rare book was published at Strasbourg in 1665. Other interesting works are: "Tobacco, injurious to the Constitution and its Use Scripturally Wrong. Dialogues between a Doctor and a Miner, by a Surgeon," London, 1840; Murray on "Snuff-taking: Its Utility in Preventing Bronchitis, Consumption, etc.," 1870; Löwy on "Raucherparanoia"; Jamet on "L'Art de Fumer," Metz, 1845; Heward's "St. Nicotine," 1909; and Bragge's "Bibliotheca Nicotiana," Birmingham, 1880. The last-mentioned work is the bibliography of tobacco, and is to that subject what Lowndes and Brunet are to literature in general.

Among rare works offered for sale in this catalogue, but not necessarily dealing with nicotine and tobacco, special mention should be made of the "Isagoge-Magico-Medica," of Aug. Etzler, published at Argentoratum (Strasbourg) in 1631. This deals with the whole subject of signaturism. Bidloo's superb volume with wide margins known as "Ontleding (Anatomy) des menschelijken Lichaams," is here offered for 75 florins.[1] The plates illustrative of human anatomy, by the celebrated artist G. de Lairesse, are those which Cowper embodied without acknowledgment in his famous "Myotomia." His theft was not suspected till the discovery, by an assistant librarian in the Royal College of Surgeons of England, that the name of Bidloo had been covered with a neat circular label on Cowper's title-page, the same process having been gone through in other similar volumes. One is sorry to take away the reputation for literary honesty of so good a surgeon as Cowper, whom, indeed, Lowndes defends in a note. Here also is offered for 65 florins Gautier Dagoty's extremely fine atlas of the Anatomy of the Generative Parts of Man and Woman. The book is one of great rarity, and is especially interesting in that the plates, which closely follow nature, are perhaps the earliest known instance of colour-printing in three colours, an invention usually considered to be of quite recent date. Gautier Dagoty published his great folio in Paris as long ago as 1773.

[4] Assam Secretariat, June, 1921.
[5] Assam Government Press, September, 1921.

ABOLITION OF ABLUTION CENTRES IN MANCHESTER.

By a majority vote the Manchester City Council have decided to close the two early treatment or ablution centres established in the city about two years ago for the use of men who had been exposed to the risks of venereal diseases. These centres were originally established with the approval of the Ministry of Health and the City Council. In 1921 there were 8146 attendances for ablution at the centres.

THE RULE OF THE ROAD.

To the Editor of THE LANCET.

SIR,—There has been a good deal of controversy in the papers and elsewhere as to the desirability of altering the rules for driving and walking in this country, in order to diminish the number of accidents to pedestrians who, stepping off the path on to the road, are knocked down by vehicles coming up from behind. Some towns have already decided to alter the rule for pedestrians and make them keep to the left instead of to the right, but it is the rule of the road and not that for pedestrians which should be changed. In most countries, the rule of the road is to keep to the right, and this is also by nature the rule for pedestrians. It works quite satisfactorily. In an article published in the *Nineteenth Century* in 1890, entitled "Left-leggedness," I endeavoured to show that the rule of keeping to the right in walking was due to the fact that the left leg being the stronger, there was a natural tendency for man in walking to bear to the right.

I am, Sir, yours faithfully,
W. KNOWSLEY SIBLEY.

Cavendish-place, W., May 19th, 1922.

THE NEW STANDARD ENGLISH CATHETER GAUGE.

To the Editor of THE LANCET.

SIR,—Perhaps if in our previous communication we had referred to this simply as an adjustment of the gauges at present in use, we should have escaped the criticism of your correspondent, Mr. Leonard Myer, in your issue of last week. The plan he has suggested was considered with others of a similar nature. The sizes from 1 to 12 of the English catheter gauge are those in common use, but we have explained that there are no two makers whose gauges exactly agree throughout this range of 12 sizes, although the differences are so slight as to rarely have attention drawn to them.

What the Association has done is to take these 12 sizes, to arrange a uniform gradation between each with a definite relation to the French scale, which has been accomplished with so slight an alteration on existing scales as to practically show less divergence than between the varying gauges now on the market. Another advantage of the scale is that it fits in well with the extra sizes, those below 1 and those above 12.

The further suggestion of your correspondent that we should have first consulted a surgeon on the subject was fully present to our minds, and had we ventured on a radical change it might have been considered necessary, but difficulty arose from the fact that it would be difficult to consult all surgeons interested and without raising a much wider issue. Our suggestion merely settles the differences between instrument makers and gives our gauges a relation to the French scale which our constant contact with members of the medical profession satisfies us will be acceptable. Should a radical change at any time be deemed desirable, the medical profession may rely on the cordial assistance of members of this Association.

I am, Sir, yours faithfully,
G. R. CHEESMAN,
Hon. Sec., Surgical Instrument Manufacturers' Association.

May 20th, 1922.

[1] A florin = 1*s.* 8*d.* sterling.